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ABSTRACT

This guide on nutrition instruction can be used on the school district level for curriculum development or by teachers as a basis for daily lesson planning. The text is arranged by topic, subtopic, objectives, learning activities, and teacher information. Topics include nutritional status, adolescent development, diet, body weight, and environmental health. (CJ)

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ED191846

HEALTH EDUCATION
PHYSICAL DIMENSIONS OF HEALTH

NUTRITION EDUCATION

GRADES 7-9

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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FOREWARD

How to Use This Curriculum Guide

This guide is designed to improve nutrition education in two ways:

1. It can be used as a *basis* for curriculum development at the school district level. The local curriculum development committee should select those topics, objectives and learner activities that are most consistent with local nutrition resources, needs and interests. *These should be expanded further or modified in accordance with learner needs and developmental levels.* They can also be arranged in sequential and progressive order to eliminate unnecessary duplication and to avoid gaps in learning.

2. The guide can be used by teachers as a *basis* for daily lesson planning. Topics, objectives and learning experiences should be selected by the teacher (and perhaps by the learners) that are most appropriate for the group of learners. Appropriateness should be determined by the learners' abilities, needs and interests.

The text is arranged by topic, subtopic, terminal objectives, enabling objectives, learner activities, and teacher information. The topics and subtopics provide the teacher with a means for identifying the desired broad area of nutrition. The *terminal objective* indicates the goal to be achieved, while the *enabling objectives* identify the stepping stones for achieving the terminal objective. The learner activities are intended to assist the learners in achieving their enabling objectives. Finally, the teacher information section provides the teacher with information needed to facilitate the implementation of the learner activities. Teachers are urged to review the *Teachers' Manual* prior to or in conjunction with lesson planning. See Appendix A, p. 107 of the *Teachers' Manual* for sources of assistance in planning and teaching about nutrition.

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MESSAGE TO TEACHERS

Attitudes about food that directly affect eating patterns on a day-to-day basis are generally well established by the time the learners reach early adolescence. However, the learners' curiosity about nutrition, especially some of the current food fads, is intense. Early adolescents are seeking the truth about what they see and hear about foods and are willing to experiment. It is important to assist the learners to objectively analyze advertisements in the media and some of the questionable books promoting diets and the so-called organic and health foods. Opportunities should be provided for comparing what is said about foods and diets by the media with what nutrition scientists have found to be true through research.

Emphasis should be placed upon how questionable dietary fads come into being, are promoted and why some are as widely used as they are. There are many areas of nutrition that are still unclear to nutritionists and these are frequently the areas that are capitalized on by the nutrition quacks. However, much is known and this should form the scientific basis for disputing unscientific claims.

Nutrition education should be practical, laying a sound foundation for future food choices and general eating patterns. Analysis of present food behavior using such devices as the Recommended Dietary Allowance table along with recognized tables of nutrient values of foods can be enlightening for the learners. Such approaches can have a life-long impact on the total nutrition of the learners.

TEACHING/LEARNING

STRATEGIES

TOPIC

EFFECTS OF NUTRITION ON HEALTH

SUB-TOPICS

HOMEOSTASIS

DYNAMIC STATE OF THE BODY

INDIVIDUAL VARIATIONS

NUTRIENT DEFICIENCIES

NUTRIENT EXCESSES

TERMINAL OBJECTIVE

To understand that adequate nutrition is essential for optimal health.

ENABLING OBJECTIVES

The learner is able to:

1. explain the process of nutritional homeostasis.
2. define "dynamic state" and give several examples.
3. describe how each person's nutrient requirements vary.
4. describe how the progress of a nutritional deficiency upsets homeostasis and may result in a clinical disease.
5. show how excessive intakes of dietary supplements can cause illness.

TOPIC: Effects of Nutrition on Health SUB-TOPIC: Homeostasis

TERMINAL OBJECTIVE: *To understand that adequate nutrition is essential for optimal health.*

ENABLING OBJECTIVE: *The learner is able to explain the process of nutritional homeostasis.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Using a machine with which most learners are familiar, an automobile, for example, have them discuss and describe in general terms, all of the things the machine needs for optimal functioning. Compare the similarities of the human body's needs. Examples are: a car needs gas, air and water; the body needs food, oxygen and water.	Be sure to point out that no machine is as complex as the human body. The biochemical nature of the human body makes it possible to change the food we eat into usable nutrients. However, there are some aspects of machines that can be compared with the body, such as, the need for energy and the elimination of waste.
Choose a food and trace its path through the body (intake, digestion, absorption, excretion) using a poster depicting the human digestive system. o What parts of the body are involved in the digestive system? o What happens to food during digestion? o Where is food absorbed in the body? o For what purposes are nutrients used?	It might be helpful to define digestion and absorption at this time so that the learners will have an understanding of how food is prepared for use by the body. (See page 47 of the *Teachers' Manual*.)
Distinguish between the food we eat and the nutrients we need. o Choose several foods and identify the nutrients found in each. o Briefly describe the function of each nutrient in the body.	The foods we eat contain the nutrients we must have for growth, energy, regulation of certain body processes, and repair of worn-out cells. Nutrients are substances essential for the nutriture of the body. (carbohydrates, protein, fats, minerals, and vitamins) (See page 26 of the *Teachers' Manual.*)

Discuss the role of water.

Compare:

- o the body's cooling system (perspiring) to the automobile's cooling system (radiator and hoses)
- o the body's waste disposal and elimination functions to the automobile exhaust system.

Approximately 2/3 of the body's weight is water. Water serves as a solvent and mode of transport for nutrients and waste products that result from the utilization of food. Water composes a major portion of such essential body fluids as blood, saliva, perspiration, and digestive juices.

SUB-TOPIC: Dynamic State of the Body

ENABLING OBJECTIVE: *The learner is able to define "dynamic state" and give several examples.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Discuss what is meant by the term "dynamic state." o What constitutes a dynamic state? o What is a static state? o Is the body ever static? Why?	See page 53 of the *Teachers' Manual*. Dynamic state of the body will vary depending upon the kind and amount of work being done. During sleep, for example, the body's dynamic state decreases and the amount of energy needed also decreases.
Classify objects as dynamic or static. For each dynamic object mentioned, identify the kind of work being done and the energy being transformed. o Where does the energy come from? o How is it expended?	A spring is in a static state until it is stretched or compressed. During this movement, it is in a dynamic state. Energy is always expended during any dynamic state.
Discuss what happens when the dynamic state in a living organism ceases and a static state ensues.	All living organisms are in a dynamic state. Once this changes to a static state, death has occurred. Various parts of the body are in various stages of work.
Discuss what happens in a dynamic state if the energy supplied is too much or too little for the amount of work to be done. o Why is a nutritious breakfast important? o What happens to our performance if our energy supply is not adequate? o Where do we get our energy from? o Is the dynamic state of people constant? Explain.	This might be compared to an engine using a low octane fuel when a high octane fuel is needed. The engine simply can not perform as well. This is also true with the human body. With some activities, larger amounts of energy are needed to perform efficiently. Emphasize that people get their energy from the food they eat. (See pages 44-47 of the *Teachers' Manual.*)

Have the class plan and conduct a demonstration to show that no work can be done unless a dynamic state exists.

Work may be defined as an activity that achieves a purpose. The purpose may or may not be useful. With all forms of work some amount of energy will be expended.

SUB-TOPIC: Individual Variations

ENABLING OBJECTIVE: *The learner is able to describe how each person's nutrient requirements vary.*

LEARNER ACTIVITIES	TEACHER INFORMATION
o What is food energy needed for in the body? o What is food energy derived from in the human body? o What factors influence an individual's requirements for food energy? o What are the effects of taking in too little food energy for body needs? o What are the effects of taking in too much food energy for body needs? o For what reasons might a person take in too little or too much food energy?	If one takes in too much food energy the excess is stored in the liver, muscles and converted to fat. Bring out the social and psychological implications as well as reasons for taking in too little or too much food energy. At this time, it will be helpful if the learners also recognize that this may take place because of a lack of accurate nutrition knowledge.
o How does increasing or decreasing physical exercise affect the dynamic state of energy balance?	There is a direct relationship between physical activity and one's need for food energy.
Have each learner determine daily caloric needs.	(See page 46 of the *Teachers' Manual*.)

SUB-TOPIC: Nutrient Deficiencies

ENABLING OBJECTIVE: *The learner is able to describe how the progress of a nutritional deficiency upsets homeostasis and may result in clinical disease.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Read *The Great Vitamin Mystery*.	This booklet is available from the office of the Dairy Council. See page 107 of the *Teachers' Manual* for addresses of these offices. (See page 60 of the *Teachers' Manual*.)
Individual or groups of learners may be assigned a specific nutrient to investigate. o Report to the class on the functions of the nutrient, the disease or symptoms resulting from severe deficiency, a brief history of the disease, and sources of nutrients to prevent the problem.	This section on nutrient deficiencies should be regarded as an overview, not a body of knowledge to be memorized. While students may be interested in the extreme forms of deficiency diseases, it is important that this subject be kept in its proper perspective. (See pages 38-40 of the *Teachers' Manual*.)
Have learners choose a deficiency disease to research: o Identify the nutrient involved. o List food sources of the nutrient. o Outline the history of the disease. o Include pictures of persons with the deficiency disease.	The research paper should provide a summary of vitamins and minerals respectively that may be reproduced for student use and may be helpful in identifying food sources along with other information related to the assignment.
Learners can make an "old maid" card game for class use. Using index cards or squares of construction paper, they will write either a nutrient, nutrient function, food source, or deficiency disease on each of 52 cards. Students can match: o Nutrient with food source (example: protein/milk) o Nutrient with function (example: carbohydrate/quick energy) o Nutrient with deficiency (example: iron/anemia)	Construction paper squares or index cards can be laminated with plastic.

Learners can make "Nutrition Jeopardy" game. Jeopardy game boards can be produced from posterboard. Learners can compose questions concerning nutrients, functions, sources, and deficiency diseases.

Save the Jeopardy gameboard to be used with other topics.

Discuss which of the following you consider to be nutritionally vulnerable groups of people. Why?

- o Unborn children (fetus)
- o Infants from birth to age 3.
- o Children from ages 4 to 12.
- o Adolescents
- o Adults from 23 to 50 years of age.
- o Pregnant women
- o Elderly

Emphasize nutritional needs during periods of rapid growth and development especially during pregnancy with the development of a child.
(See pages 52, and 70-76 of the *Teachers' Manual*.)

Compare the reactions of a well-nourished individual to those of a marginally nourished one in the following stressful situations:

- o emotional upsets
- o growth spurts
- o pregnancy
- o illness
- o fever
- o grief

Stress increases the need for many nutrients. You may want to discuss why and provide several examples.
(See page 60 of the *Teachers' Manual*.)

Learners can report on one of the great famines in history.

- o How did people survive?
- o What effects did famine have on people - physically, emotionally, socially, and economically?
- o What effect did the previous nutritional status of people have on their health during the famine?
- o Describe some recent famines.
- o What might some of the long-range consequences of a famine be?

This project could be done in conjunction with the social studies department. The Irish potato famine from 1840 to 1880 and Biafra famine during the 1960's are good examples.

The "Guide to Good Eating" from Dairy Council recommends eating a source of vitamin C every day and a source of vitamin A several times a week.

- o What are the reasons for this difference in recommendation?
- o How sound is this recommendation for most people?
- o What is the difference between fat soluble and water soluble vitamins?
- o How are these vitamins stored in the body?
- o List the fat soluble vitamins.
- o List the water soluble vitamins.
- o Why is it more dangerous to ingest an excess of a fat soluble vitamin than a water soluble vitamin?

(See page 107 of the *Teachers' Manual* for the address of the Dairy Council in your area.)

Water soluble vitamins are stored in the liquids of the body. Excess amounts of them are excreted with perspiration and urine. Vitamins B and C are water soluble.

Fat soluble vitamins are stored in fat in the body. Excess amounts of them can be toxic. Vitamins A,D,E, and K are fat soluble.

Overexposure to heat, air, and water can destroy nutrients.

- o What methods of food preparation preserve valuable nutrients?
- o What methods of food preparation destroy valuable nutrients?
- o How should food be stored to preserve nutrients?

Have the learners construct collages of pictures of foods depicting sources of vitamins A and C.

Have the learners choose a variety of fresh vegetables to prepare in class. (Examples - carrots, spinach, peas, potatoes)

- o Divide class into groups.
- o Have each group choose a vegetable and prepare it twice, once cooking it properly then overcooking it.
- o Using an evaluation sheet, judge the color, taste, texture, and flavor of the vegetables.
- o Compare results with the class.
- o Compare the above characteristics with the raw vegetables also.

Overcooking causes changes in the color, taste, texture, and flavor of vegetables and destroys nutritional value.

SUB-TOPIC: Nutrient Excesses

ENABLING OBJECTIVE: *The learner is able to show how excessive intakes of dietary supplements can cause illness.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have a discussion of the idea that "If a little of something is good for you, it is not always true that a lot must be better."	(See pages 60-61 of the *Teachers' Manual*.) Incidents of hypervitaminosis occur mainly from overdoses of multi-vitamin pills or drops. Although small amounts of vitamins are essential for health, too much of the fat soluble ones can be injurious to health. (See also, page 33 of the *Teachers' Manual*.)
Discuss vitamin supplements. o Are vitamin pills the same as drugs? o How are they similar? o How are they different? o Should vitamin pills be treated the same way as drugs? Explain. o If vitamin pills are present in the house, how should they be stored?	The FDA Fact Sheet #CSS-F11-71, "Some Questions and Answers About Dietary Supplements," will prove useful in discussing related topics. This fact sheet may be obtained from the Regional Office of the Food and Drug Administration. Consult the telephone directory under "United States Government" for the regional office in your area.
Discuss "What to Look for In a Food Supplement." Have the learners bring in the labels or check the labels of food supplements they have in their homes against the amounts recommended by the Council on Foods and Nutrition of the AMA. Poll the class to determine how many learners take such supplements and how many of such preparations exceed the various recommended amounts.	The Council on Foods and Nutrition of the American Medical Association reports that only the 12 ingredients listed below are appropriate, in the amounts indicated, for a daily, general purpose food supplement. One's physician may decide that preparations containing fewer ingredients or smaller amounts meet an individual's requirements.

- What are dietary supplements?
- Are natural vitamins better than synthetic vitamins? Explain.
- Should everyone take vitamin and mineral supplements daily to maintain health? Explain.
- Will dietary supplements give a person pep or a feeling of well-being? Explain.
- Can one take too many vitamins and minerals? Explain.
- Are fresh foods a better source of vitamins and minerals than processed foods? Explain.
- What is the difference between enriched foods and fortified foods?
- Would your diet be better if it contained whole wheat and other dark breads rather than enriched white bread? Explain.
- Are certain types of labeling and advertising for vitamin and mineral preparations prohibited? Explain.
- With so many foods to choose from and all those that are fortified, how can we be sure that the kinds of food we select will provide a good diet?

Vitamin A ---------- 2500 to 7500 USP units (U.S. Pharmacopia)

Vitamin B (Thiamine) ---------- 0.8 to 2.4 mg.

Vitamin B_2 (Riboflavin) ---------- 0.9 to 2.7 mg.

Vitamin B_6 (Pyrodoxine) ---------- 1 to 3 mg

Vitamin B_{12} --------- 2 to 10 meg (microgram)

Vitamin C (Ascorbic acid) ---------- 35 to 110 mg.

Vitamin D ---------- 400 U.S.P. units

Niacin ---------- 12 to 20 mg.

Pantothenic acid --- 5 to 10 mg.

Folic acid --------- 0.3 mg.

Iron ---------- 5 to 15 mg.

Calcium ---------- 400 to 1200 mg.

The addition of nutrients to food is based on policies set by the National Academy of Sciences and the Food and Drug Administration. Some of the processes involving the addition of nutrients include restoration, enrichment, fortification, and nutrification.

See pages 39,40,43 of the *Teachers' Manual* for the Recommended Daily Allowances of vitamins and minerals. (See page 78 of the *Teachers' Manual*.)

Visit a store where vitamin supplements are sold.

- o Observe the multitude of dietary supplements available.
- o Interview one of the store employees.
- o Try some of the samples that may be offered.
- o Report to the class on your experience.

In a collection of small bottles, place a year's supply (use RDR x 365) of all essential vitamins and minerals.

- o Observe the tiny amounts that satisfy the requirements.

Ask learners to prepare questions ahead for the interview. Have some learners visit a "health foods store" and make a list of the labels on some of the supplement preparations. Discuss what the message is.

RDA (recommended daily allowance) is the recommended daily intake for nutrients as established by the Food and Nutrition Board (National Academy of Science/National Research Council).

See pages 39, 40, 43, and 46 of the *Teachers' Manual*.

TOPIC	ADOLESCENT GROWTH AND DEVELOPMENT
SUB-TOPICS	INDIVIDUAL VARIATIONS EFFECTS OF NUTRITIONAL ADEQUACY OR INADEQUACY
TERMINAL OBJECTIVE	To understand that the adolescent growth spurt accentuates the need for adequate nutrition.
ENABLING OBJECTIVES	The learner is able to: 1. defend individual variations within growth patterns as normal. 2. conclude that effects of nutritional adequacy or inadequacy are especially important during times of rapid growth and development.

TOPIC: Adolescent Growth and Development **SUB-TOPIC:** Individual Variations

TERMINAL OBJECTIVE: *To understand that the adolescent growth spurt accentuates the need for adequate nutrition.*

ENABLING OBJECTIVE: *The learner is able to defend individual variations within growth patterns as normal.*

LEARNER ACTIVITIES

Have the learners compute how heavy they would be now if they had kept up the same rate of growth they had during their first year of life.

- o What do the results mean?
- o What takes place to prevent this from happening?

Have the class construct a large graph showing average height and weight from birth to their present age.

Discuss where the graph-line will go from this age to maturity. Obtain data on heights and weights of a class two years beyond this one and estimate the way it will go through the 12th grade.

Have the learners compare themselves with standard height and weight charts to see if they fall within these averages.

- o How many of the learners are in the median range, for height and weight? Why?
- o What does the data suggest for each learner?

TEACHER INFORMATION

(See pages 49-52 of the *Teachers' Manual*.) If data are available from their baby books, the learners can use their own birthweight and their weight at the age of one year. For example, one weighing 7 pounds at birth and 21 pounds at one year has tripled his/her birth weight. If this tripling continued, he/she would weigh 63 pounds at 2 years of age, 189 pounds at three years of age, and so on.

Obtain as much data as possible on the learner's heights and weights. Parents, school nurses, teachers, physicians may have data for various periods in the learners' lives.

The school nurse-teacher may be able to assist with this activity.

Physical Growth Range from 12 to 18 years

Age	Shortest	Median	Tallest	Lightest	Median	Heaviest
			Boys			
12	53.5	58.6	63.7	60.0	86.0	113.5
13	55.2	61.3	67.4	65.3	98.6	131.9
14	75.5	64.1	70.7	75.5	111.8	148.1
15	61.0	66.9	72.8	88.0	124.3	160.6
16	63.8	68.9	74.0	97.8	133.8	169.8
17	65.2	69.8	74.4	106.5	139.8	174.0
18	65.9	70.2	74.5	110.3	144.8	179.3

Have the learners plot their own height and weight chart. Compare with the Meredith growth chart.

Have the learners find the following terms and definitions in a dictionary:

- o average
- o normal
- o typical

Compare meanings.

- o How are these terms used interchangeably? Should they be? Explain.
- o How does average differ from normal? From the median?

Physical Growth Range from 12 to 18 years

Age	Shortest	Median	Tallest	Lightest	Median	Heaviest
			Girls			
12	54.1	59.5	64.9	63.9	94.4	124.9
13	57.1	62.2	66.8	72.8	105.5	138.2
14	58.5	63.1	67.7		113.0	144.0
15	59.5	63.8	68.1		120.0	150.5
16	59.8	64.1	68.4		123.0	150.1
17	60.1	64.2	68.3		125.8	153.7
18	60.1	64.4	68.7		126.2	156.4

Source of Data: U.S. Public Health Service

Meredith growth charts are widely used by pediatricians and schools. The school nurse-teacher or school physician will probably be able to supply them, and may offer to come to class to explain them. The Meredith chart shows the range of height and weight for 98 percent of normal individuals at a given age. It will be easy to see a learner's individual relation to the wide range of normality in height and weight.

Obtain average height data on boys and girls separately from a class of 7th grade pupils and from a class of 12th grade pupils. Make a chart to compare changes which occur over this period of time.

- o Why are girls in the 7th grade taller than the boys?
- o After the 12th grade, will girls ever exceed boys in height again? Why?

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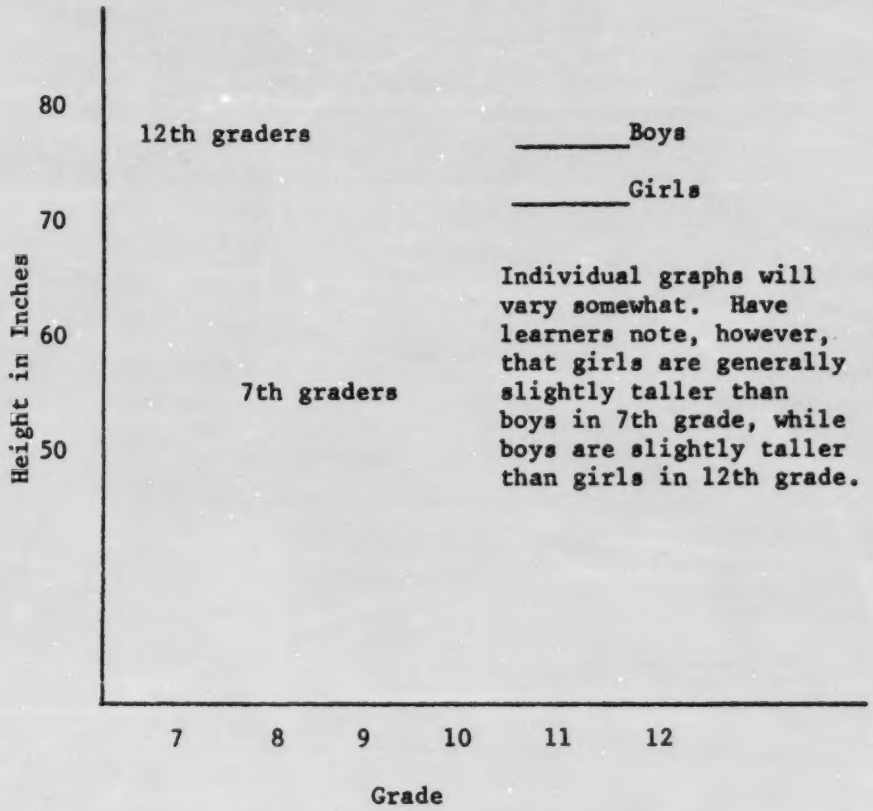
A graph could be developed similar to the one shown below.



Individual graphs will vary somewhat. Have learners note, however, that girls are generally slightly taller than boys in 7th grade, while boys are slightly taller than girls in 12th grade.

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Invite the school physician or a pediatrician to bring some x-ray pictures of developing bones and explain them to the class.

- o Describe what you see.
- o What can be concluded?
- o What is the relationship of nutrition to skeletal development?

Some learners may be able to obtain x-ray pictures of their own bones in cases where a bone has been broken in the past several years. A learner who has had such an experience may be able to borrow the x-rays from his/her physician.

Obtain a long bone from an animal (a drumstick bone from a chicken or turkey). Split the bone lengthwise and examine it closely. Note the spongy area near the end of the hollow center. Also, note the epiphysis.

Discuss possible reasons why children seem to have accidents such as falls without injuries while adolescents often have casts, crutches, and slings as a result of the same type of accident.

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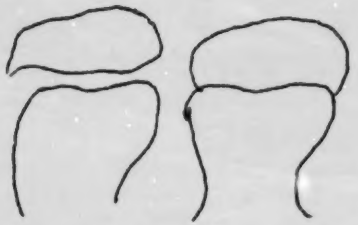
During the adolescent growth spurt, teenage bones normally lengthen and become more rigid and strong. The process of bone mineralization offers an opportunity to discuss why older people's bones break more easily than younger people's, what nutrients are necessary for bone development, and where these nutrients are found in food.



Immature bone Mature bone

This is the area where calcium is laid down as the bone is mineralized, and new cells are formed in the spongy area. Even in a mature bone, the epiphyseal line can be seen.

Calcifying bone gradually becomes less flexible with age and stronger and more rigid. Children's bones are softer and more resilient. Adolescents often experience clumsiness as a side effect of uneven growth of bodily parts.

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SUB-TOPIC: Effects of Nutritional Adequacy or Inadequacy

ENABLING OBJECTIVE: *The learner is able to conclude that effects of nutritional adequacy or inadequacy are especially important during times of rapid growth and development.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Make a list on the chalkboard of the major nutrients. Have the class relate specific body tissues that each nutrient helps to build. o Are there some nutrients that are necessary for all tissues? Describe. o Are there some tissues that do not need certain nutrients? Explain. o Will excessive amounts of certain nutrients build more of the tissues that need the nutrient? Explain. o Are there certain foods for certain tissues? Explain.	See the *Teachers' Manual*, pages 37, 44 and 49-51. This may provide the opportunities to dispel such misconceptions as "fish is a brain food," or "athletes need large quantities of meat."
If a museum is available which contains medieval clothing, suits of armor, or other clothing from a far-distant era, compare the size of clothing then with the size of the average person today. o Compare the living conditions of medieval time with now. What effect could they have on the size of people? o Compare the food availability of then and now. o Contrast knowledge of nutrition, medicine, and health in medieval times and now.	The average size of human beings has increased with improved living conditions, increased availability of nutritious foods, and revolutions of knowledge in nutrition, medicine, and health.

The learners can determine whether their parents are taller than their grandparents; whether they are or will be taller than their parents.

- o What part does nutrition play?
- o What other factors play a role in this difference?

Individual growth potential and patterns are determined by heredity and influenced by nutrition among other factors.

TOPIC	NUTRITIONAL STATUS
SUB-TOPIC	INFLUENCING FACTORS
TERMINAL OBJECTIVE	To deduce that an individual's nutritional status is determined by an interaction of nutrient intake with heredity, state of health, environment, and physical activity.
ENABLING OBJECTIVES	The learner is able to list and explain several factors which influence how well nourished a person is.

TOPIC: Nutritional Status **SUB-TOPIC:** Influencing Factors

TERMINAL OBJECTIVE: *To deduce that an individual's nutritional status is determined by an interaction of nutrient intake with heredity, disease, environment and physical activity.*

ENABLING OBJECTIVE: *The learner is able to list and explain several factors which influence how well nourished a person is.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Discuss how adequate diets differ for two people of the same height, weight, and age, one engaged in a strenuous occupation and the other with a sedentary job. o Determine and compare any differences in calorie and protein needs for two defined individuals. o Are the conclusions equally applicable to women and men? Explain.	Caloric needs increase with body size and physical activity. Protein needs depend upon growth rate and body size, not on physical activity.
How would hookworm parasites affect the individual's needs for nutrients in order that they remain in good nutritional health. (Assuming it is not possible to get rid of the parasites).	Hookworm parasites are a common problem in much of the tropical parts of the world. The infection causes internal blood loss. You may want to relate such stresses on the body in developing nations where the food supply is frequently inadequate.
Invite a physician, a dietician, or a public health nutritionist to talk with the class about diseases, such as diabetes, phenylketonuria, hypertension, and obesity, in which diet is a significant part of the treatment.	It is important that nutrition be considered as an interaction between people, their food and environment. Nutrition does not operate in a vacuum, but is an integral part of the dynamic equilibrium which composes health. You may want to relate this to earlier discussions of "dynamic balance" or homeostasis. (See pages 53-54 of the *Teachers' Manual*.) See the *Teachers' Manual*, page 108 for the offices of the regional nutritionists.

Choose a food allergy (grapefruit, orange, corn, tomato, potato, fish, shellfish, milk, chocolate, wheat, egg, strawberries) to research, OR interview a person with a food allergy, and do a report for class.

- o What are the characteristics and symptoms of the allergy?
- o What modifications must be made in the person's diet?
- o How is the cause of a food allergy detected?
- o How is the allergy treated?
- o What foods can replace the ones the person cannot eat?

Food allergies present problems requiring special dietary provisions. However, a person with a food allergy can obtain an adequate diet through substitute foods containing the same nutrients but lacking the allergic substance.
The symptoms of a food allergy may include nausea, vomiting, gastrointestinal distress, rashes and edema.

Discuss what is meant by the term a "well-balanced diet."

- o How would a "well-balanced diet" differ for:
  - -male/female?
  - -tall person/short person?
  - -overweight person/underweight person?
  - -active person/sedentary person?
  - -child or adolescent/adult?
  - -person in stress/one who is not?

All people need the same nutrients but may need them in varying amounts depending upon gender, body size, physical activity, growth periods and stresses placed on the body.

The use of the Recommended Daily Dietary Allowances tables can help to illustrate these differences and similarities.
(See pages 39, 40, 43, and 46 of the *Teachers' Manual*.)

Show the film or video tape, "Food for Health" from the series, *Food---What For?*

This film is available through the *County Cooperative Extension Office*. (See page 107 of the *Teachers' Manual*.) It depicts a study of nutritional status of teenagers including measurement of height and weight, taking blood samples for hemoglobin measurements and dietary evaluation.

(See page 59 of the *Teachers' Manual*.)

Ask the school nurse-teacher or a public health nurse to visit the class and demonstrate how hemoglobin determinations are made. Perhaps hemoglobin analysis can be done for the entire class.	Obtain approval for this activity from the school administration.
Have pupils prepare a dietary analysis for three consecutive days.	Obtain *Nutritive Value of Foods*, Home and Garden Bulletin No. 72, United States Department of Agriculture, Washington, D.C. It provides the nutritive value of over 600 foods commonly eaten by American families. Also, the office of the Dairy Council has similar materials for helping learners to do a dietary analysis. Contact the regional nutritionist of the New York State Department of Health. See pages 107-109 of the *Teachers' Manual* for addresses.
In an essay, compare and contrast the nutritional problems in the United States with those of a developing nation. o How does malnutrition in the United States differ from that in a developing country? o Why does the United States continue to rank high among advanced nations in infant mortality rate? o How is the widespread malnutrition in developing countries a cyclical problem?	Malnutrition in developing nations is, in general, a more complicated problem than in the United States. (See pages 92-98 of the *Teachers' Manual*.)
Discuss the reasons for nutritional problems in the United States. o What does education have to do with nutritional problems? o How do excesses cause nutritional problems?	The existence of plenty of food for the vast majority of people in the United States as compared to the developing countries of the world does not assure the nutritional health of all people. (See pages 82-88 of the *Teachers' Manual*.) You may want to discuss some of the highlights of these studies as well as conclusions and government actions.

- o Do you think that a survey of nutritional status of the United States population is needed at this time? Why or why not?

- o What might be the results of such a survey in terms of action by the Federal government?

Choose or ask for volunteers to read and study the findings of the Owen Study conducted during 1968-1970 to investigate the nutritional status in a cross-sectional sampling of children throughout the United States.

(See page 82 of the *Teachers' Manual*.) For the complete study see "Nutritional Status of Preschool Children in the United States, The Owen Study," *Pediatrics*, Vol. 53, 1974, p. 597.

- o Volunteers will present a panel discussion for the class.

- o Other students should be prepared to ask questions.

- o Are the results of the study still applicable? Describe.

Roleplay a dietitian or nutritionist explaining to the mother of a malnourished child that multivitamin supplements cannot replace a nutritious diet.

A nutritious diet is composed of much more than just vitamins and minerals. (protein, fat, carbohydrate are necessary.)

Invite persons native to other countries to visit class to speak about the nutritional problems of their homeland.

A nearby university often has a number of students from foreign countries.

Consult with the local health department, public health nutritionist, or physician to identify local health problems and their nutritional implications.

This could be an excellent research project for a small group of learners. Each group member could interview a different person, compare and analyze his or her findings. What one person may perceive as a significant health problem, another may not.
(See page 88 of the *Teachers' Manual*.)

- o List the health problems.

- o Are there programs to deal with them?

- o How effective are they? Describe them.

The primary determinants of nutritional status are

- o budgeting
- o food procurement
- o food preparation
- o family eating practices

Learners can debate the relative importance of these factors.

- o Which one or ones seem to be the most important for an adequate diet?
- o Are there programs to assist people in overcoming any of these restraints? Describe them.
- o What role can adequate nutrition education play?

Any attempt to improve nutritional status must involve all of these factors. Supplying money is no guarantee that people will eat well.

TOPIC

ASSESSING DIETARY ADEQUACY

SUBTOPICS

RECOMMENDED DIETARY ALLOWANCES

NUTRIENT DENSITY

BASIC FOUR FOOD GROUPS

CULTURAL FACTORS

NUTRITION LABELING

TERMINAL OBJECTIVE

To understand the basic principles underlying the use of various criteria for assessing dietary adequacy.

ENABLING OBJECTIVES

The learner is able to:

1. define and apply the recommended dietary allowances criteria.
2. analyze and explain that the basis for the nutrient density approach is the nutrient-calorie ratio.
3. analyze and explain that the basis for the division of food into the basic food groups is its nutrient content.
4. Compare dietary adequacy of various cultures.
5. State how nutrition labeling is an important factor for maintaining nutritional status.

TOPIC: Assessing Dietary Adequacy **SUB-TOPIC:** Recommended Dietary Allowances

TERMINAL OBJECTIVE: *To understand the basic principles underlying the use of various criteria for assessing dietary adequacy.*

ENABLING OBJECTIVE: *The learner is able to define and apply the recommended dietary allowances criteria.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Invite a dietitian to visit your class to discuss the use of Recommended Dietary Allowances. o How were the RDAs established? o For what purposes are they used? o What is the rationale behind the setting of RDAs higher than actual requirements for various nutrients? o Why do the RDAs need to be revised periodically?	(See pages 39, 40, 43, and 46 of the *Teachers' Manual*.) The RDAs are intended to serve as goals for planning food supplies and guides for the interpretation of food consumption records of groups of people. The allowances given for each nutrient are greater than for the average needs for most people providing a "margin of safety" to allow for individual differences among people. (*The revised RDA tables are scheduled to be published in 1979*.)
Compare the RDAs with the MDRs. o What is the purpose of MDRs? o What is the purpose of RDAs? o Distinguish between RDA (recommended dietary allowance) and USRDA (recommended daily allowance).	It is important to clarify the distinction between RDA and Minimum Daily Requirements (MDR). This will enable the learner to more readily comprehend how RDAs allow for individual variation and for normal stress and are designed to provide good nutrition for practically all healthy Americans. The MDR tables are being used less frequently by most nutritionists, but it might be useful for the learners to become familiar with this method of dietary analysis.
Have the learners compare the RDA and MDR for specific nutrients for their age group. o Why is there such a difference between them? o Why is there no difference in regard to vitamin D? o What can you conclude from these tables in regard to one's nutritional health?	The MDRs are minimum requirements while RDAs are minimum recommendations which allow for variation in people, their activity and daily stress factors.

MINIMUM DAILY REQUIREMENTS OF SPECIFIC NUTRIENTS

AS ESTABLISHED BY THE FOOD AND DRUG ADMINISTRATION

	Vitamin A iu	Vitamin D iu	Ascorbic Acid mg	Thiamin mcg	Riboflavin mcg	Niacin mg	Calcium mg	Phosphorus mg	Iron mg	Iodine mcg
Infants	1500	400	10	250	600	a/	a/	a/	a/	a/
1 to 6 years	3000	400	20	500	900	5.0	750	750	7.5	100
6 to 12 years	3000	400	20	750	900	7.5	750	750	10.0	100
12 years or older	4000	400	30	1000	1200	10.0	750	750	10.0	100
Pregnant or lactating women (b)	4000	400	30	1000	1200	10.0	1500	1500	15.0	100

(a) No value reported.

(b) Minimum daily requirements for calcium and iron were established specifically for pregnant or lactating women. Other values represent requirements for all persons 12 years of age or older except for vitamin D which applies to the entire population (infants, children, and adults).

SUB-TOPIC: Nutrient Density

ENABLING OBJECTIVE: *The learner is able to analyze and explain that the basis for the nutrient density approach is the nutrient-calorie ratio.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Using the following formula, have the learners calculate the nutrient density of some of their favorite snack foods for the following nutrients: o protein o vitamin A o vitamin C o iron Nutrient Density per 1000 calories = $\frac{\text{RDA for nutrient}}{\text{Energy RDA for age and sex}}$ Compare the results to what they calculate for some forms of fresh fruit, fish, peanuts, milk, etc. Calculate todays breakfast or lunch nutrient density.	(See page 58 of the *Teachers' Manual*.) The nutrient density concept refers to the relationship between the nutritive value of a food and the amount of energy or calories it provides. Nutrient dense foods provide a high yield of nutritive value for the number of calories. Calorie-dense foods have high concentrations of energy in small amounts. (examples: fat, cane sugar, and maple syrup.)
Discuss the basis for the nutrient density approach to designing and planning diets. Have the learners plan sample diets for the following people based on the nutrient density formula: o teenage athlete o pregnant woman o overweight college student o nursing mother	Diets should be planned to be acceptable for groups of mixed ages and sexes as this is the way most people eat. The major difficulty with the nutrient density approach is that calorie intake of similar individuals vary substantially for unknown reasons. Other factors that need to be considered are food supplies, food habits, general food likes and dislikes.

SUB-TOPIC: Basic Four Food Groups

ENABLING OBJECTIVE: *The learner is able to analyze and explain that the basis for the division of food into the basic food groups is their nutrient content.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Using a poster depicting the Basic Four Food Groups, discuss the basis for the division of foods into food groups and for the various recommendations of the number of servings of each. o What food group do you think Americans are least likely to slight? Why? o What food group do you think Americans are most likely to slight? Why?	(See page 57 of the *Teachers' Manual*.) Obtain the poster *A Guide to Good Eating* from the office of the Dairy Council. (See page 107 of the *Teachers' Manual*.) The "Basic Four" is a simple device for planning adequate nutrition on a daily basis to outline the variety of foods that will provide a "balanced diet" that includes the essential nutrients. This plan does not provide for adequate amounts of iron and energy.
Analyze one day's diet for how many foods fall within which of the four food groups. o Compare the number of servings eaten in each food group to the guide's suggestions. o Make personal recommendations to improve diet.	Be certain that the learners include snacks as well as regular meals. Snacks, when carefully chosen, can add significant nutrients to the day's intake of food. They can also add significantly to caloric intake when not carefully chosen.
Make a list of foods that do not fall into any of the four food groups. o Why are these foods left out of the four food groups? o Can you suggest additional groups? o Why might additional categories be useful?	Sugar or refined fats and oils are not included in the "Basic Four" because these substances, although important in nutrition, mainly provide energy and are usually not lacking in American diets. Suggestions for additional groups to categorize all foods: o *empty calories* - foods high in calories but deficient in nutrients. (Examples: potato chips, candy, gum, soda) o *special extras* - miscellaneous category for foods that won't fit elsewhere. (Examples: catsup, mustard, relish, salad dressings)

Have the learners examine the basic four recommended daily amounts:

- o What is the rationale for larger amounts during pregnancy? During lactation?
- o What misconceptions are presently circulating regarding the dietary needs of pregnant and nursing women?
- o What nutrients are supplied by the various groups that are needed in larger amounts?

Nutrition plays an important role in successful reproduction. Misconceptions can lead to unfortunate dietary patterns. Birthweight of the baby is directly related to the mother's dietary practices during pregnancy, among other factors. Birthweight is also associated with the health and survival rates during the first year after birth.

Have each learner list all the fruits and vegetables he or she has eaten in the past 24 hours.

- o Compile a list for the class of all the fruits and vegetables eaten.
- o List the vitamin C sources and vitamin A sources separately.
- o Which ones need to be eaten daily?
- o Which ones should be eaten several times per week?
- o What can be concluded about the class nutritional behavior?

The differing recommendations for vitamin C sources and vitamin A sources are based on the fact that vitamin A being fat soluble can be stored in the body while vitamin C cannot. Vitamin C is water soluble, and an excess will be excreted in the urine.

Have learners read about the milling of grain products.

- o What is the difference between enriched and whole grain products?
- o What is the purpose of enrichment of grain products?
- o When is enrichment required by law?
- o What problems result from storing whole grain products for long periods of time?

(See pages 27 and 77 of the *Teachers' Manual*.)

Cereal foods are the primary source of energy for much of the world's population. Not only Americans, but people throughout the world select white bread in preference to whole grain breads. Many nutrients are lost when grains are highly milled.

Grains are also a source of incomplete protein and when eaten with other good sources of protein can be significant in providing the needed protein at a relatively low cost.

Have the learners examine the labels of bread and cereal products to discover whether they are enriched or whole grain.

Make a list of foods composing the meat group.

- o What nutrients do they have in common?
- o What name might be a more accurate one for the meat group?
- o Why is protein essential for good health?
- o Why are protein deficiencies prevalent in developing countries but relatively uncommon in America?

The meat group might be more accurately called the protein group. Americans are least likely to avoid meat than any other food type. Meats are good sources of complete proteins, but they are also generally high in fat content. They are also good sources of many of the essential vitamins and minerals. See pages 38, 41 of the *Teachers' Manual* for sources of vitamins and minerals. See also page 46 for the RDA for protein.

Invite a knowledgeable vegetarian to discuss with the class his or her diet.

- o What types of vegetarian diets are popular?
- o Why is it important that a vegetarian have a good working knowledge of nutrition?
- o What is a fruitarian?
- o What foods are included in a vegetarian diet?
- o What protein sources might a vegetarian rely on?
- o What are "organically" grown foods?

A vegetarian diet can be very nutritious if well-planned. You may also want to discuss so-called health foods and organic foods in this context. See pages 68 and 69 of the *Teachers' Manual* for a discussion of fad diets.

SUB-TOPIC: Cultural Factors

ENABLING OBJECTIVE: *The learner is able to compare dietary adequacy of various cultures.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Learners have been contracted as nutritionists to design nutrition guides for other parts of the world. Divide class into small groups and have each group brainstorm to produce a list of factors which will influence the development of each guide.	Many factors influence the types of nutrition education tools developed for various regions of the world. o foods available in the region o traditional food patterns of the population o nutritional needs and problems of the population o educational level of population o foods familiar to the population
Choose a side in this matter and support your beliefs in an essay: The Puerto Rican food guide is based upon "some foods which everybody eats, other foods we ought to eat in addition." Do you think this approach would work in the United States? Why or why not?	The American population represents a "melting pot" of nationalities. Diet in the United States is not based on a single staple product as is true in many developing countries.
Each learner can choose another homeland and study the food practices of that country. Pretend that you are moving to the United States. o What aspects of your dietary pattern will be retained? o Which aspects will change more quickly?	Encourage learners to interview anyone they know who has moved from a foreign country to the United States.

Have the learners modify the basic four food groups to make this guide more meaningful to:

- o Black Americans
- o Mexican Americans
- o Oriental Americans
- o Native Americans

As a joint project with the social studies department, divide the class into small groups of 5 or 6 learners. Have each group develop a nutrition guide for the following populations:

- o a tropical country with rice as the staple food eaten at every meal. Principal protein sources besides rice are small fish, fish paste, and fermented soybean products. Fresh fruits and vegetables are available in abundance. Milk is frequently not safe unless canned or powdered, and it is not well-accepted. Most of the population cannot read, so it is necessary to make the guide pictorial and clear.
- o A European country where a variety of foods is available to the people. Wheat is the staple (whole grain). Favorite foods include white potatoes, pork, fish, cabbage, cheese, butter, sour milk and cream, sweets, and fresh fruit in season. Assume that most of this population is literate.

Perhaps instead of modifying the basic four groups for adaptation to cultural preferences, the class may want to establish a new criteria guide that is appropriate for all people or for many ethnic groups. There are some nutritionists who feel that the four food groups are no longer adequate. There is a tendency toward other criteria, such as nutrient density. An analysis, by the class, of the adequacy of these guides to good nutrition may be helpful in assessing their nutritional status and eating practices.

SUB-TOPIC: Nutrition labeling

ENABLING OBJECTIVE: *The learner is able to state how nutrition labeling is an important factor for maintaining nutritional status.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Discuss: o What is a complete protein? o In what types of foods do we find complete proteins? o What is an incomplete protein? o In what types of foods do we find incomplete proteins? o Which type of protein is considered higher quality?	(See page 44 of the *Teachers' Manual*.) Complete protein foods contain all of the essential amino acids in approximately the correct ratios to be used by the body. Most animal proteins (milk, eggs, meat, fish, poultry) are complete. An incomplete protein lacks one or more of the essential amino acids and by itself will not support growth. Plant proteins, as in cereals, are incomplete.
Vegetarians face the problem of needing to insure themselves with complete protein intake. o List on the board a variety of plant proteins with the essential amino acid they are lacking. o Have learners make a list of combinations of these plant proteins that will provide all the essential amino acids.	An incomplete protein food eaten with a complete protein food will provide all of the essential amino acids. (Example: cereal eaten with milk.)

Hand out a copy of a food label to each student. With teacher using a transparency of a label for class to see, learners will locate the various parts of a label and mark them as mandatory or optional information.

- o Do all additives have to be listed on a label?
- o Are vitamins always added for food value?
- o Must all chemicals be listed?
- o What is toxic?
- o How do new labels tell more about what is in foods?
- o Do flavoring ingredients have to be listed on the label?
- o When is a flavor also a food?
- o What is in new foods? in imitation foods?
- o What special rules apply when additives are nutrients?
- o When is a food a dietary supplement?
- o How are nutritional values for a food product determined?
- o Are fresh produce, meat and dairy products excluded from labeling regulations? Explain.
- o In what instances is it not necessary for ingredients of a food to be listed on the label?

Obtain FDA Consumer Memo #74-2036, "The New Look in Food Labels" and FDA Consumer Memo "Nutrition Labeling-- Terms You Should Know" from the Food and Drug Administration, Regional Office, 599 Delaware Avenue, Buffalo, New York 14202. An excellent resource in this area is the booklet *Nutrition Labeling-- How It Can Work for You*, The National Nutrition Consortium, Inc., 9650 Rockville Pike, Bethesda, MD. 20014.
(See page 78 of the *Teachers' Manual*.)

Using sample food labels brought to class, have learners compare the labeling on:

- o ordinary foods
- o "special dietary use" foods
- o dietary supplement (extra fortified) foods
- o imitation foods
- o standardized foods
- o heat and serve main dishes or dinners
- o noncarbonated "no-juice" beverage products

TOPIC

ADEQUACY OF TEENAGE DIETS

SUB-TOPIC

TYPICAL DIETS

STUDIES OF TEENAGERS' NUTRITIONAL STATUS

NUTRITIONAL CONCERNS

TERMINAL OBJECTIVE

To interpret the adequacy of the teenage diet.

ENABLING OBJECTIVES

The learner is able to:

1. evaluate the adequacy of the teenage diet.
2. analyze the factors affecting teenage nutrition and relate them to personal food behavior.
3. explain why teenagers are individuals with unique needs and concerns regarding food.

TOPIC: Adequacy of Teenage Diets **SUB-TOPIC:** Typical Diets

TERMINAL OBJECTIVE: *To interpret the adequacy of the teenage diet.*

ENABLING OBJECTIVE: *The learner is able to evaluate the adequacy of the teenage diet.*

LEARNER ACTIVITIES	TEACHER INFORMATION
From their personal experience, have learners list aspects of teenagers' eating practices which draw criticism from adults. Interview parents to ask specifically what they think is wrong with the way teenagers eat. In class, discuss possible reasons for each criticism. o Is the practice nutritionally harmful? o Does the practice cause inconvenience to other people? o Does the adult see the practice as a sign of independence and/or rebellion or is it simply different from the adult's practice?	(See pages 66-69 of the *Teachers' Manual*.) Teenage food habits are an area of frustration and concern for many parents. To ease the frustration, parents and teens need to communicate feelings about their eating habits. Duplicate general results for the class and send a report home to parents.
Also, ask parents what they think is right about teenagers' diets. o Are parents' perceptions based on fact or misconceptions? Explain. o What do teenagers think of the adequacy of their parents' diets? o Do teenagers tend to imitate their parents' eating practices?	Common adult criticisms may include: o frequent snacking o skipping meals, especially breakfast o fad dieting o unorthodox food combinations o eating unusual foods at particular meals

Have each learner make a list of 10 foods they love to eat and drink. Draw several vertical columns to the side of the list.

- o In column 1, rank order each learner's food preferences.
- o In column 2, place an H beside each food usually eaten at home with the family.
- o In column 3, place an F beside each food usually eaten with friends or peers.
- o In column 4, place a P beside each food usually prepared by themselves.
- o At end of activity, make a list of new things they learned about their food habits.
- o Compare results with others in class.

Using the above list, evaluate the nutritive value of the chosen foods.

- o Why do they like the foods?
- o How do their personal likes compare with the rest of the class?
- o Is taste the only criterion?
- o Are the foods nutritious?
- o Which foods should be eaten sparingly? Why?

Have learners keep a three-day food record. Using the records, carry out the following activities:

- o Each learner evaluates his/her own record on the basis of the recommended numbers of servings from the four food groups. Tabulate, for the class, which food groups were most often slighted. Tabulate separately for boys and girls.

Food choices are based on many factors:

- o likes and dislikes
- o peer influence
- o family food habits
- o opportunities to prepare for self
- o concern for nutrition
- o desire to control weight

It may also be helpful if the 10 foods listed by the learners were analyzed for their nutrient density, why they are favorites, whether some or many are fast foods, ethnic foods, and so on.

From evaluation of food records, learners will obtain much information about their own food habits and will be able to compare them with others.

- After identifying the food groups most often slighted, identify the nutrients that would therefore be likely to be low. List foods which are good sources of these nutrients.

  This could also be done using the RDA tables to determine whether these recommended amounts of the essential nutrients are being met.

- Use food records (possible a randomly selected sample of anonymous records) for class discussion and suggestions for improvement.

  Evaluate the nutritional adequacy of the entire day's food intake. It is not essential that foods be eaten in structured meals or at usual times.

  (See pages 66-68 of the *Teachers' Manual*.)

- Identify the practices which are most often associated with the best and the poorest diets in the class (in terms of meals, shacks, etc.)

  Following these discussions, have the learners make a list of the eating practices that would improve their diets. After one week, repeat the activities to determine whether the learners applied their improved eating practices. If so, what are their feelings about these changes? If not, discuss what factors prevent the changes, or what further needs to be done to motivate these changes.

- If the records reflect a school lunch program, determine what approximate percentage of the day's intake came from the school lunch. If some learners participated in the school lunch program and others did not, compare the value of the lunches eaten by the two groups.

SUB-TOPIC: Studies of Teenagers' Nutritional Status

ENABLING OBJECTIVE: *The learner is able to analyze the factors affecting teenage nutrition and relate them to personal food behavior.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Write an essay describing why nutrition is especially important during the teenage years. Include: o appearance o growth o physical activity o preparation for adult life (this may be especially important for girls who want to become mothers.) o as a prevention of diseases related to nutrition.	Adequate nutrition is especially important during the adolescent years. Some reasons include: o High nutrient needs due to rapid growth. o Need for positive good health to meet the demands of school and social life. o Teenagers will soon be the next generation of parents; their health will affect their children. o Food habits formed during the teen years may persist for a lifetime.
Conduct a survey of breakfast eating habits. Each learner will personally interview several persons to determine: o Do they usually eat breakfast or not? o For what reasons do they or do they not eat breakfast? o What foods are usually eaten for breakfast? o Do they consider breakfast important?	The results of this activity can be analyzed for conclusions about the kinds of attitudes many people may have about breakfast and breakfast foods. Ascertain which attitudes are positive and accurate and which ones are negative, inaccurate or merely excuses.

Evaluate the results of the breakfast survey:

- o Why is food in the morning important?
- o Is it important to make breakfast easier to fix and to eat?
- o What are the most frequent excuses given for skipping breakfast?

Learners can plan a foods lab experience to compare breakfast foods. Divide the class into 4 groups. Each group will be assigned to prepare:

- o homemade instant breakfast made from milk, raw egg, and fruit juice or jam for flavoring.
- o commercially prepared "instant breakfast."
- o traditional breakfast of cereal, toast, juice, and milk.

Learners will sample the breakfast they prepared and:

- o compile a report that compares cost, preparation time, dishes, utensils and equipment needed, and nutritive values.
- o share results with class.

Have learners rank order from 1 to 6 each of the items listed to the right based on how important they feel each finding is to total nutrition and overall health of teenagers.

- o Are the findings reflective of their personal food habits? Explain.
- o Tabulate the results to determine the class value rating.

Breakfast is probably the most important meal of the day. A good one provides protein, vitamins, and minerals, furnishes fuel for energy, and tastes good. Most excuses given for not eating breakfast are ones that can be readily dealt with. Foods can be served for breakfast that are quick, nutritious, and appetizing. Like any other meal, breakfast can provide opportunities for socializing, communicating, and motivating family members for the day ahead.

For additional interest, have one or two groups choose and prepare some unusual foods that could be eaten for breakfast. (Examples: pizza, grilled cheese sandwiches, fruit salad, etc.)

Have the learners indicate which breakfast they prefer.

Also, discuss the breakfast that is most enjoyable for the most number of learners, and which one is most nutritious.

Below are some general findings of recent studies of teenage nutrition according to the United States Department of Agriculture.

- o Most teenagers are well-nourished, healthy individuals.
- o Many teenagers are concerned about their weight (often girls want to lose, boys want to gain).

- Snacking is common, and in most cases is a benefit to the diet.

- Diets are most often poor when less than three meals a day are eaten.

- Girls, because they need fewer calories than boys, tend to have more trouble getting an adequate intake of nutrients.

- The nutrients most often in short supply are iron and calcium, with the lack of vitamins C and A sometimes showing up as problems too.

ENABLING OBJECTIVE: *The learner is able to explain why teenagers are individuals with unique needs and concerns regarding food.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have the learners read *Your Food: Chance or Choice?* o What is a basis for food selection? o What are some low calorie high nutrient snacks? o Why are food choices important?	This is available through the office of the Dairy Council. See page 107 of the *Teachers' Manual* for addresses nearest you.
Girls usually experience the adolescent growth spurt at an earlier age than do boys. Look at transparencies that illustrate the growth spurt and accompanying physical changes. o List several physical changes that occur during adolescence to girls and boys. o Are eating practices important, prior to the adolescent growth period, for boys and girls alike? Explain. o What implications for eating practices does the differential growth rate between boys and girls have?	There are some excellent resource materials available through the American Medical Association. Write to Director, Department of Health Education, American Medical Association, 535 North Dearborn St., Chicago, Illinois 60610, for the catalogue.

Invite a pediatrician or dermatologist to speak to the class and respond to questions about skin problems of adolescence.

- o What are some common skin problems?
- o What part, if any, does nutrition play in the prevention of these problems?
- o What are some causes of acne?

(See page 66 of the *Teachers' Manual*.)

Teenagers have misconceptions that need to be dispelled about the relationship between nutrition and skin problems. Prior to the visit by the physician, have the learners list what they think causes, prevents, or controls skin problems. These may be put into question form to be asked the speaker.

Collect ideas and beliefs about the effects of food on physical performance.

- o Discuss their value, physiologically and psychologically, to the athlete, to the non-athlete.
- o Do any of these ideas, if practiced, do any harm?
- o What do you think about dieting to meet weight standards for wrestling weight classifications? Support your response with factual evidence.

At this point, it may be sufficient to point out, using food records as a basis, that it is more difficult for a person trying to lose weight to obtain an adequate diet in terms of nutrients.

(See page 68 of the *Teachers' Manual*.)

Invite a person whose job it is to care for the health of a team of athletes (Example: team physician or trainer) OR read articles written by the same type of person and report to class on their philosophies and techniques.

- o Are special types of foods or diets recommended?
- o How is the nutritional status of each player evaluated?
- o How accurate are the recommendations according to nutritionists?

Be sure to obtain a reliable resource person who has qualifications, knowledge, and background in the area of nutrition. Sports sections of newspapers and sports magazines often contain articles written on this topic.

Have the learners rank order the following nutritional concerns of teenagers (add any concerns not listed that they may wish to include) on a scale of 1 to 5 according to which one they feel is of the greatest (1) to which one they feel is of the least (5) concern to them:

- o High nutritional needs due to rapid growth and development during adolescence.
- o Optimal nutrition needed for appearance, energy, well-being and long-term good health.
- o Maintaining desirable body weight
- o Modifying diets to conform to what you have heard will increase athletic performance.

Have the class discuss the importance of each of these concerns prior to implementing the activity. Following this activity, discuss justifications for the class' overall value rating.

TOPIC

FACTORS AFFECTING BODY WEIGHT

SUB-TOPIC

HEREDITY

EXERCISE

FOOD INTAKE

TERMINAL OBJECTIVE

To understand the relationship among the chief factors affecting body weight.

ENABLING OBJECTIVES

The learner is able to:

1. explain the hereditary control of body build and its contribution to body weight.
2. conclude that regular exercise can make a significant difference in body weight control as well as total fitness.
3. list the several factors which affect caloric needs.

TOPIC: Factors Affecting Body Weight **SUB-TOPIC:** Heredity

TERMINAL OBJECTIVE: *To understand the relationship among the chief factors affecting body weight.*

ENABLING OBJECTIVE: *The learner is able to explain the hereditary control of the body build and its contribution to body weight.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have the learners observe and make a list of variations in body structures of the people in the class: o What factors determine body build? o What part does heredity play in the shape of one's body? o Which of these factors can and cannot be changed in body weight?	Body build is determined by bone structure, muscles, and body fat. These factors are inherited. Bone structure and muscle development cannot be changed. Total body fat can be changed but not rearranged. (See pages 62-65 of the *Teachers' Manual*.)
Using 5x7 file cards, have each learner prepare a personal assessment card of his/her weight and other measurements. o Sort cards on the basis of single common characteristics. o Find averages of the measurements for the class. o Develop tables of these measurements according to average age, sex, height, and weight. o Post tables on a bulletin board or make available to each learner.	Names of learners are not necessary for this activity. Examples of data to be gathered are listed in the sample below: Age _____ Sex _____ Height _____ Weight _____ Sitting Height _____ Length of arms _____ Circumference of shoulders_____ Circumference of hips _____ Circumference of biceps _____ (Mid-upper arm) Circumference of wrist _____ Circumference of ankle _____

The learners should be able to draw several conclusions:

- o everyone is different in some respects, but also similar in others.
- o boys and girls measurements are generally different.
- o Each person has personal characteristics.
- o Tables generally, provide information for the average.

Have the school nurse-teacher visit the class to demonstrate the use of skin-fold calipers to determine the triceps skin-fold measurement.

Skin calipers are used to determine an accurate assessment of body fat. Explain that females have more body fat than males and that they will measure "fatter."

- o learners can use calipers to measure each other.
- o skin-fold measurement can be added to personal measurement chart on the index cards.

Obtain some of the height-weight tables that are in use and have the class study them.

Some of the data from insurance companies are obtained only from those that have been insured. This eliminates individuals that are judged uninsurable by the company. Discuss what this may do to the accuracy of the data. Also, methods of taking measurements may vary considerably; e.g., height with shoes on. Discuss what constitutes the thickness of a "shoe."

- o What are some of their limitations?
- o How are the data obtained?
- o What is meant by a small (light), medium, and large (heavy), body frame?

Using a standard height-weight chart, have the learners ascertain what their desirable weight range is for their body build, height, and sex.

Caution needs to be exercised in doing this activity as some people may always be overweight or underweight by the charts because of their bone structure even if they are not too fat or too thin. Weight variations can be due to fatness, inherited physical structures, or musculature. Muscle tissue is heavy. Development of muscle tissue through exercise may increase body weight but not fatness.

- o How many in the class are actually "average" according to the table?

Describe the somatotypes from looking at pictures:

- o ectomorph
- o mesomorph
- o endomorph

Have learners determine which somatotype or combination of somatotypes they are closest to.

These somatotypes (body types) are pure classifications. People are usually a blending of the three types. Dietary patterns and lifestyles may camouflage some of the basic hereditary structure.

Ectomorphs - slight in frame with relatively long arms and legs.

Mesomorphs - heavy in bone and muscle, athletic in appearance, limbs of moderate length.

Endomorph - round and soft body particularly in the abdominal region.

ENABLING OBJECTIVE: *The learner is able to conclude that regular exercise can make a significant difference in body weight control as well as total fitness.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have the learners keep a record of how they spend their time for one 24-hour period. Classify activities as sleep, rest, light activity, moderate activity, strenuous activity. Figure out how many hours were spent in each category and what percentage of the day was devoted to each. o Is the class generally engaged in strenuous activity? o Using a rating scale of 1 to 3, how does each person rate? the class? (1 = light activity; 2 = moderate, and 3 - strenuous)	Examples of the categories are: o *Sleep*---dozing or sound sleep o *Resting*---lying awake, watching T.V., sitting in class, reading, etc. o *Light activity*---typing, eating, dressing, driving, writing, etc. o *Moderate activity*---house-work, walking, washing the car, mowing the lawn (with a power mower), etc. o *Strenuous activity*---running (jogging), swimming, climbing stairs, riding a bicycle, most contact sports, e.g., football and soccer.
Discuss: In what ways could you expend extra calories during the day to make a significant difference in your total daily caloric expenditure? o Make a list of suggestions that would enable someone to engage in a more strenuous than a less strenuous activity.	Some examples would include: o walk instead of drive or ride o play in a sport or game instead of being a spectator. o walk upstairs instead of using an escalator or elevator. o stand instead of sit.

ENABLING OBJECTIVE: *The learner is able to list the several factors which affect caloric needs.*

LEARNER ACTIVITIES	TEACHER INFORMATION
The body's total energy needs are: Basal Metabolism + Energy for Activities + Specific Dynamic Effect o What is the basal metabolic rate (BMR)? o What bodily activities make up basal metabolic functions? o In what pattern does the BMR change as one ages? o What factors affect basal metabolic rate? o How is an individual's BMR determined? o What is the specific dynamic effect? What is a calorie? What is a kilocalorie? Have a learner research the use of and draw a poster of a calorimeter. He/she can use the poster to illustrate the functioning of the calorimeter to the class.	Basal metabolism is the amount of energy required to maintain the body functions, exclusive of activity and digestive processes. Maintenance functions for which the body requires energy include the functioning of vital organs and glands, breathing, metabolism in the cells, blood circulation, and maintenance of body temperature. Basal metabolism is unique for each individual. Specific dynamic action is the energy needed to convert and transport food from the form in which it is eaten to the many individual nutrients needed by cells throughout the body. The estimate for energy for specific dynamic action is obtained by adding the number of kilocalories for basal metabolism and physical activity and multiplying this figure by 10 percent. (See pages 44-46 of the *Teachers' Manual*.) Calorie is a commonly heard word today, but its definition is rather vague to the average person. A Calorie is the amount of heat necessary to raise one gram of water one degree Celsius. The calorimeter is an instrument widely used for ascertaining the calorie content of foods.

Each learner can keep a record of the kind and amount of food he or she eats for a 24-hour period.

- o Using a table of caloric values, calculate the approximate calorie intake.

Compare the calorie intakes of all the learners in the class.

- o Note the high and low intakes.
- o Average female intakes separately from male intakes.
- o Which had the larger intake on the average? Why?
- o Relate learner's individual calorie needs to their circumstances of size, growth rate, physical activity.

Have learners list activities they enjoy (biking, swimming, jogging, etc.) and determine how many calories are burned during each activity.

Have learners make a list of their favorite foods to eat.

- o Determine the number of calories in each food.
- o Suggest an activity that will burn that number of calories.

A general knowledge of the caloric content of foods aids in weight control. Charts of calorie values can be found in pocketbook versions as well as included in cookbooks and nutrition books.

(See pages 62-64 of the *Teachers' Manual*.)

Calorie needs vary a great deal among individuals and for the same individual at different times.

Energy is needed by the body for <u>all</u> activities. The more vigorous the activity, the greater the amount of energy required.

Learners are often discouraged by the seemingly low number of calories burned during activity.

Have learners describe how each of these factors influence caloric needs:

- o age
- o body size
- o sex
- o basal metabolic rate
- o rate of growth
- o physical activity
- o presence of disease or other stressful circumstances

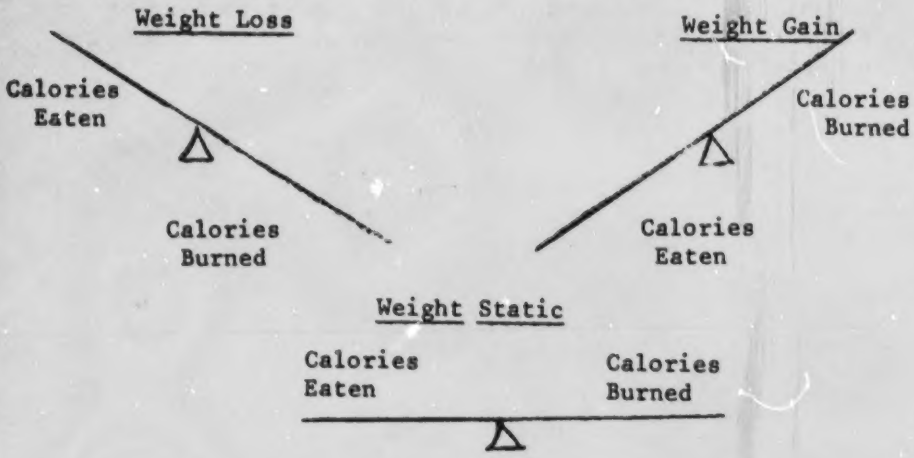
Which factors are within your control?
How could they be alterable in regulating calorie use?

Discuss why caloric (energy) needs for the following types of people vary:

- o tall person versus short person
- o office worker versus construction worker
- o child versus adult
- o athlete versus spectator
- o teenager versus grandparent

Some of the factors influencing our caloric needs are out of our control. One factor we can alter to affect our caloric use is the amount of physical activity we do.

Have learners analyze food intake/weight relationship using a seesaw:



Social and psychological implications as well as reasons for the intake of too little or too much food energy should be discussed. Learners need to recognize that weight problems can be caused by a lack of accurate nutrition knowledge that influences adversely eating practices.

- o What are the effects ot taking in too little food for energy needs?
- o What are the effects of taking in too much food for energy needs?
- o For what reasons might a person take in too little or too much food energy?

Debate: The body stores food energy in the form of body fat. Identify pros and cons.

Some stored body fat is essential, but adverse effects result from too much fat.

Have learners keep a record of food eaten for one day, and activities participated in.

- o Determine the number of calories eaten.
- o Determine the number of calories burned in activities.
- o Determine total energy needs for the day (Basal metabolism + Energy for Activities + Specific Dynamic Effect)
- o Compare the number of calories eaten to the calories burned.

Weight control can best be accomplished by a continuing interest in remaining at the recommended weight in relation to height. Weight problems are far easier to correct when they begin to develop than when one has accumulated an excess of many pounds.

TOPIC

Health Implications of Obesity

SUB-TOPICS

MORBIDITY/MORTALITY

SOCIAL/EMOTIONAL

OBESITY: TRANSIENT AND PERSISTENT

TERMINAL OBJECTIVE:

To understand that there are individual differences to be accounted for in the evaluation of weight status.

ENABLING OBJECTIVES:

The learner is able to:

1. conclude that there are several health implications of obesity.
2. conclude that obesity can be a very real social and emotional handicap.
3. deduce that it is easier to get one's weight under control early in life than later.

TOPIC: Health Implications of Obesity **SUB-TOPIC:** Morbidity/Mortality

TERMINAL OBJECTIVE: *To understand that there are individual differences to be accounted for in the evaluation of weight status.*

ENABLING OBJECTIVE: *The learner is able to conclude that there are several health implications of obesity.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Obesity complicates most diseases and health problems. Have the class compile a list of all the health risks that are associated with obesity. o How does obesity complicate these health risks?	Obesity has been implicated in the following: o cardiovascular diseases o diabetes o high blood pressure o increased surgical risk o gall bladder disease o atherosclerosis o varicose veins o deterioration of weight-bearing joints (See pages 64, and 84-88 of the *Teachers' Manual*.)
There is an increase in obesity today as compared with the turn of the century. o Have learners determine reasons for this increase. o List ways we can overcome these situations. Example walk instead of riding.	Americans place high value on making life as easy as possible. Many inventions have decreased the amount of physical labor we do. (Examples: labor saving devices, rapid transit systems, etc.)

SUB-TOPIC: Social/Emotional

ENABLING OBJECTIVE: *The learner is able to conclude that obesity can be a very real social and emotional handicap.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have learners describe the type of figure and fashion that is most admired in today's world. Make a bulletin board using this theme. o Discuss how some of the fashions would look on a heavy person. o Why is such importance placed on slimness in our society?	The degree of body fatness is important from the standpoint of health, beauty, and social acceptance - exerting an influence on virtually all aspects of one's life.
Compare how other cultures throughout history have given positive appreciation to a plump figure while today's world tastes revere the gaunt fashion model figure. o For what reasons have both figure types been highly acceptable? o What dangers are involved in achieving the extreme figure types?	During periods in history, social status was conveyed by plumpness. A well-rounded figure was associated with affluence and good health.

Discuss the effect that being overweight might have on an individual's:

- o morale
- o feelings with friends
- o success
- o happiness
- o appearance
- o self-confidence
- o ability to exercise
- o fatigue level
- o ease of physical movement

Caution: Use utmost caution in this area, especially if there are obese students in the class. The teen years are very sensitive to begin with. Imagine how much more they must be for the obese teen. Emphasize the positive actions one can take rather than being critical of what exists. You might be more comfortable inviting the school nurse or school psychologist to be present for this discussion.

Survey the class anonymously to determine how many think that their weight falls within the average range for their body build and height.

- o How many would like to lose weight? Why?
- o How many would like to gain weight? Why?
- o How many feel they need to lose weight only in specific parts of their body? Where?

Many people, especially teenagers, feel that they are overweight even when they are not. Most people feel they can improve their physical appearance and that there are some aspects of personal dissatisfaction. Teenagers may tend to be over critical of themselves. Emphasize those factors that can result in the development of a positive self-concept.

Have the learners imagine themselves to be overweight. Identify the social problems one might have because of the excess weight.

- o How would these social situations affect the way one feels about him/herself?
- o Are "jolly" fat people really happy? Explain.
- o Why do some seem to be jolly?

Obese people are often rejected and not accepted socially. Outward appearances, and expressions are sometimes a disguise to underlying true feelings.

After successfully losing weight to regain normal and desirable weight, many people continue to imagine themselves "fat." Discuss why this phenomenom is common.

Have the learners describe what they think is an ideal body for males, for females. Discuss why they think these features are ideal.

- o Are the features described conducive to health? Explain.
- o How will these features make one more effective as a human being.

Self-image is difficult to alter. The longer a person has been overweight, the more difficulty there is involved in adjusting self-image.

Some so-called ideal features may not be as desirable as one may think as far as health promotion is concerned. Desirable features carried to extreme can also interfere with one's effectiveness. For example, over development of musculature may interfere with many human activities and actually be physically unhealthful.

SUB-TOPIC: Obesity: Transient and Persistent

ENABLING OBJECTIVE: *The learner is able to deduce that it is easier to get one's weight under control early in life than later.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Discuss the difference between classes of obesity: o Hyperplastic o Hypertrophic o Which one do you think appears mainly in childhood? In adulthood? o Which do you think is the most difficult to overcome? Why?	Hyperplastic refers to too many fat cells present while hypertrophic refers to the size of fat cells already present.
o Distinguish between transient and persistent obesity. Discuss the health implication of each.	Transient obesity appears periodically and usually can be easily controlled. Persistent obesity is more or less continuous. Some authorities believe that persistent obesity may be normal and that it may be more harmful to diet than to accept it.
Have learners pretend they are a nutritionist. What advice would they give in relation to weight control to: o mother of a newborn infant o mother of an obese child o overweight teenager	The earlier in life one controls his/her weight, the more easily and successfully control will be achieved.

TOPIC	DEALING WITH OVERWEIGHT
SUB-TOPIC	MEDICAL SUPERVISION BEHAVIOR MODIFICATION FAD DIETS ANOREXIA NERVOSA
TERMINAL OBJECTIVE	To recognize the various means of dealing with overweight.
ENABLING OBJECTIVES	The learner is able to: 1. conclude that medical supervision can help in the assessment and management of weight problems. 2. develop a system of rewards for various behaviors which are conducive to weight control. 3. analyze one or more well-known fad diets for nutritional adequacy. 4. deduce that it is possible to become excessively concerned with overthinness.

TOPIC: Dealing with Overweight **SUB-TOPIC:** Medical Supervision

TERMINAL OBJECTIVE: *To recognize the various means of dealing with overweight.*

ENABLING OBJECTIVE: *The learner is able to conclude that medical supervision can help in the assessment and management of weight problems.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Invite the school physician or a pediatrician to class to discuss the physician's role in helping young people with weight control problems.	(See the *Teachers' Manual* pages 64-65.) A physician is best qualified to assess whether a problem really exists and the seriousness of it. He/she can assist one in making a plan of action taking into account individual circumstances.
The following are characteristics of a successful reducing diet. Identify how each factor contributes to success: o satisfies all nutritional needs. o comes as close as possible to eating practices and one's tastes. o protects from between meal hunger, gives a sense of well-being and doesn't make one feel tired. o is easy to obtain, whether at home or away, without making one feel "different." o with suitable caloric additions, can be used as a pattern for lifetime eating.	A successful weight control program must enable individuals to achieve desired weight as well as assist them in maintaining this level.

SUB-TOPIC: Behavior Modification

ENABLING OBJECTIVE: *The learner is able to develop a system of rewards for various behaviors which are conducive to weight control.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have the learners evaluate their own eating and exercise behavior. o Are you the kind of person who nibbles frequently? o Do you gorge on the evening meal? o Do you have a bedtime snack? o Is there room for improvement in your daily routine to allow for more physical activity? o Do you eat when you are upset or frustrated? o Do you skip meals to lose weight? o Do you eat only when you are hungry?	The records developed earlier on the learners' food intake and activity can be used as a starting point. Stuart, R. and B. Davis, *Slim Chance In a Fat World: Behavorial Control of Obesity*, Research Press, 2612 North Mottis Avenue, Champaign, Ill., 61820, 1972, is an excellent resource to use with discussion of this topic. (See pages 64-65 of the *Teachers' Manual*.) The school nurse can be of assistance with this topic.
Have the learners develop a plan of action based on an honest appraisal of their strong and weak points. o Make a contract with the teacher to achieve the goals of the plan of action by a certain date.	Be sure that the learners' plans for desirable changes are realistic ones they will be able to live with and achieve.

Have learners develop a list of valued rewards which could be used as incentives for various behaviors that will result in appropriate weight control.

Examples:

- o Buy some desired clothing in a smaller size.
- o Take lessons to learn a desired hobby or activity.

Note: This activity applies to all of the learners, not only those who may be overweight or who have difficulties with weight control.

Be ever cognizant of the fact that in our society food (including sweets, etc.) is often used as a reward. Be on guard for sweets and other "junk foods" slipping into the learner's reward system. Nonfood incentives may also enter into the discussion. For example, weight control is important for girls and boys who may be interested in modeling, dance and other goals that require appropriate appearance or grace that overweight may preclude. Try to place eating patterns into the broad scope of human effectiveness.

Have learners identify all the organized weight control groups they can to make a list on the board. Divide the class in groups or partners.

- o Each group can plan to attend a meeting of the group of their choice.
- o Interview the leader of the group.
- o Determine if the group attempts to use any methods of behavior modification to help participants maintain weight loss.
- o Survey participants in the program and record information about weight loss and maintenance.
- o Determine if young people are allowed to participate in the program.
- o Groups can share information in class to compare groups.

Commercial groups help individuals lose weight by positively reinforcing weight watching behavior. Group efforts offer support. Some appear to be more successful than others, some are not-for-profit organizations, while others are commercial enterprises. The chief factors in weight control are a sincere determination by the individual, realistic short-and long-term goals, and a workable knowledge of nutrition. One must also have an objective view of his or her strengths and weaknesses. Peer support is helpful for some but not for others and what works for some may not work for others.

SUB-TOPIC: Fad Diets

ENABLING OBJECTIVE: *The learner is able to analyze one or more well-known fad diets for nutritional adequacy and accuracy.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Discuss the term fad with students. Have them identify a number of fads that have been popular. o Define a fad diet. o On the board, make a list of the general areas in which fad diets usually fall; (e.g., high protein, low carbohydrate, liquid, high fiber, etc.) o Identify any of the diets that have been popular in school or in the community. o Determine what makes these diets attractive.	Fad diets usually offer an easy way to lose weight. Because losing weight is difficult, people are highly susceptible to trying these fad diets and reducing gimmicks. (See page 68 of the *Teachers' Manual*.)
Have the learners visit a health food store to observe the variety of books available on fad diets. o Make a list of books and authors of nutritional practices that are questioned by nutritionists, physicians, and other reputable groups. o How can the information disseminated by these people be counteracted.	Learners need to be made aware that all printed material is not truth. Many ideas are promoted that are not supported by the scientific and medical communities.

Have the learners prepare a poster or bulletin board illustrating the dangers of following certain food fads.

- o How might food fads present more danger to a poor person or family than one with enough money?
- o How can fad diets cause malnutrition?
- o Under what circumstances might a fad diet prevent a person from seeking badly needed medical advice?
- o Why do teenagers and children suffer most from food fads.

Most fad diets are nutritionally inadequate and seriously lacking in protein, vitamins, and minerals. Young bodies experiencing years of rapid growth, respond more quickly to poor diets. These responses may be detrimental to health.

Have learners look through newspapers, magazines, and professional journals for specific cases of malnutrition caused by food habits based on belief in a food myth or food fad.

- o Write a summary of each case found to share with the class.

Point out to learners that one of the reasons many underdeveloped countries face problems of malnutrition is that the natives have certain beliefs that are difficult to alter.

Conduct a survey among family and friends to determine if they are following any fad diets.

- o Obtain a description of the diet.
- o Ask their reasons for using the diet.
- o Do they know the true nutritional value of foods they are eating?
- o Why did they choose a fad diet over some other method?
- o Discuss with them any possible harmful effects of the diet.

Caution learners to be tactful when interviewing others and to try not to make any value judgements.

Have each learner choose one fad diet known to him or her and

- o analyze the diet for nutritional adequacy (should meet the recommendations of the Recommended Dietary Allowances.)
- o Analyze the diet for attractiveness and accuracy.
- o What misconceptions does the diet make use of?
- o To what emotional needs do the claims appeal?
- o Could the diet cause any harm to health? Explain.

Have learners prepare a list of food myths (false ideas) that are popular today. List all the myths on the board.

- o Write down nutrition facts or principles which disprove each myth.
- o How do these ideas appeal to such emotions as fear and hope?
- o How might these ideas have started?
- o What kind of a person would tend to believe these myths?
- o Is there any truth to any of these? Explain.

Some *popular food myths* include:

- o White eggs are more nutritious than brown eggs.
- o Brown eggs are more nutritious than white eggs.
- o Cucumbers cause polio.
- o Milk and cherries are poisonous when eaten together.
- o Milk is important only for children.
- o Whole wheat flour is more nutritious than enriched white flour.
- o "Natural" foods, such as yogurt, wheat germ, and blackstrap molasses, keep one young and fit.
- o Meat should not be eaten during hot weather because it increases body temperature.
- o Onions can cure a cold.
- o An apple a day keeps the doctor away.

- o Lemons make the blood thin.
- o Beets make the blood rich.
- o Feed a cold, starve a fever.
- o Thunderstorms curdle milk.
- o Margarine has fewer calories than butter.
- o Sugar in the diet causes diabetes.
- o Honey is less fattening than sugar.
- o Sour cream is less fattening than sweet cream.
- o The juices from vegetables have magic, health-giving powers.
- o If a pregnant woman eats strawberries, her baby will be birthmarked.

Have the learners write a character sketch of or draw a cartoon depicting a food faddist.

- o What are some of the typical problems of a food faddist?
- o What is he/she looking for?
- o Compile a list of words that would help describe a food faddist (curious, insecure)

Have the learners compile a list of books that are not recommended by recognized nutrition authorities. Assistance can be obtained by writing to a dietitian, a public health nutritionist, or a Cooperative Extension agent. Analyze the key concept of each book.

People who follow food fads often:

- o are well-educated
- o know little about their bodies
- o are incurable dreamers
- o are looking for a new experience
- o are serious about what they are doing
- o are calorie-conscious
- o are youth and beauty seekers
- o are health hunters

Explain how a food myth can grow into a fad.

- o How could the principles that cause a fad to spread be used to circulate sound nutrition facts that result in good eating habits.

Food faddists have trouble getting through to a "thinker'." Encourage students to be "doubters" - to question what they hear and ask for proof.

SUB-TOPIC: Anorexia Nervosa

ENABLING OBJECTIVE: *The learner is able to deduce that it is possible to become excessively concerned with overthinness.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have learners research current literature related to anorexia nervosa. o What are the anorexic's symptoms? o Is it a physiological or psychological disease? o What type of personality is likely to exhibit this type of behavior? o What factors might cause a person to become overly concerned with being excessively thin? o In what other ways could these individuals meet their needs for respect and recognition?	As with most areas of extreme unhealthful behavior, this area should be handled with extreme caution. At this point, it may be sufficient to merely introduce the topic with emphasis upon the possible harmful effects of extreme dietary practices. (See page 69 of the *Teachers' Manual*.)
Have learners take turns role playing situations in which the following people attempt to communicate with an anorexic teenager: o concerned parent o boyfriend or girlfriend o teacher o doctor o counselor	Encourage learners to take roles seriously. This type of role-playing could become very emotional. Be prepared to deal with it.

TOPIC — ENVIRONMENT AND NUTRITIONAL HEALTH

SUB-TOPICS

TECHNOLOGY

FOOD ADDITIVES

ADVERTISING

NUTRITIONAL QUACKERY

GOVERNMENT REGULATIONS

POLITICAL INFLUENCES

TERMINAL OBJECTIVE — To understand the interrelationship of the important environmental factors which affect nutritional health.

ENABLING OBJECTIVES — The learner is able to:

1. cite several instances of modern agricultural processing and marketing developments which affect the foods available to people today.
2. explain at least five functions, purposes, or uses of food additives.
3. deduce that food advertising is carefully planned and timed to effectively influence the eating behavior of specific groups of people .
4. identify unsound nutritional claims, products, and practices.
5. explain several governmental regulations as they pertain to the nutritional and sanitary quality of foods.
6. conclude that political factors have had and will continue to have great impact on the nutritional health of people.

TOPIC: Environment and Nutritional Health **SUB-TOPIC:** Technology

TERMINAL OBJECTIVE: *To understand the interrelationship of the important environmental factors which affect nutritional health.*

ENABLING OBJECTIVE: *The learner is able to cite several instances of modern agriculture processing and marketing developments which affect the foods available to people today.*

LEARNER ACTIVITIES	TEACHER INFORMATION
The raw ingredients for a food product must travel through many channels to become ready for the consumer. Choose a food item and trace it from the farm to the table including steps of processing, transporting, and marketing. o Describe the food producers and their jobs. o Describe the middlemen and their jobs.	Food producers include farmers, dairymen, fishermen, and cattlemen. Middlemen include processors, manufacturers, wholesalers, and retail grocers.
Plan a field trip to a food processing plant. o What types of processing techniques does the plant use? o Which processing techniques result in preserving the most nutrients? o Which processing techniques are most expensive for the plant?	Try to choose a plant that does some of the more advanced food processing techniques such as freeze-drying.

From one day's food intake, determine how many food items would have to be eliminated if we had to depend only upon locally produced, seasonal foods.

- o What effect does modern refrigeration and other preservation techniques have on providing people with certain kinds of foods the year around?
- o What effect does rapid transportation have on the food supply?
- o How has home canning and freezing affected the food supply of individual families?

Invite a food retailer to class to discuss the procedures involved in marketing fresh produce. Have the speaker emphasize the diversity of sources and supply, and the price of food items.

- o What types of expenses are included in a grocer's overhead or operating costs?
- o Identify types of losses food prices have to compensate for.
- o What is standard profit margin?
- o What is the food retailer's pricing policy?

Changes in economy, social and family structures, food preservation techniques, transportation, and food processing and production influence the kinds of foods people eat to some extent. In cooperation with other curriculum areas, such as social studies, discuss how these changes come about and the impact they can have on human behavior in general and social and personal attitudes about foods.

(See pages 77-81 of the *Teachers' Manual*.)

The cost of a food product is dependent upon a variety of factors.

- o operating expenses
- o losses
- o profit margin
- o pricing policy
- o inflation
- o demand
- o availability
- o agricultural methods

Have a learner write to the marketing manager of a food manufacturing company to ask about the cost of developing and selling new food items.

- o How are new food products developed?
- o Who pays for development?
- o How much does it cost to develop a new food product?
- o How many new food products are developed each year?
- o Who decides if a new food product will survive?
- o Under what circumstances does a food product vanish from grocery shelves?

Demands on time, increasing incomes, and a desire for more leisure have brought about a demand for new food products.

Increasing profits have allowed and sometimes motivated food companies to develop such new products.

Perhaps it would be possible to obtain literature from several food processors which describe new foods that have recently been developed. The learners may want to begin a collection of literature about new foods. Some of these could be compared in regard to need, development, marketing, and so on.

Have a group of learners volunteer to interview the school lunch director.

- o What are the nutritional requirements for schools participating in the National School Lunch program?
- o What effects does the school lunch program have on the day's food intake?
- o Does the school offer a breakfast program? Why or why not?
- o Determine the level of participation in the school lunch program.
- o Generally, what does the class think about the school lunches in terms of nutritive value, taste, attractiveness, and so on?

The nutritional requirements for the National School Lunch Program undergo periodic revision.

Determine whether the recent Amendment 19 to the Child Nutrition Act, 1977 is making any significant difference in the nutritional behavior of the learners or in the quality of foods being served.

Contact the regional nutrition coordinator and invite him/her to class to discuss the Nutrition Education and Training Program. Determine the coordinator's role in the program and the improvements in nutrition education and food services since the program began in 1977.

Have the learners prepare a survey to interview teachers, students, administrators, and other school employees about the school lunch program.

- o What menus are most often avoided by students? Adults?
- o What dishes are favorites of the students? adults?
- o What alternatives are available in school to eating lunch?
- o Do alternatives provide as adequate a lunch as the school lunch program? Explain.
- o What food items would students/adults like to see added to the menu?

Ask for student volunteers to collect food waste during school lunch periods.

- o Collect wasted milk in a large container that will measure the amount.
- o Separate food items that were not touched. (whole apples, carrots, etc.)
- o Weigh solid waste.

As a class project, learners could use information obtained from the school lunch director, survey of students, teachers, administrators and other school employees, and the waste study to prepare a report on participation in the school lunch program.

- o Include reasons for level of participation.
- o Recommend measures for increasing the level of participation.
- o Submit copies of the report to school board members, school administrators, teachers, and parents.
- o Determine the level of food waste in the school cafeteria and make recommendations for decreasing it.

This project will require careful planning. It will be necessary to plan this with the school food service director. Be sure that the purposes and procedures to be followed are understood by those who will be participating in the study.

The County Cooperative Extension office may be able to provide guidance as well as literature about other, similar projects in other school districts. Also, the regional nutrition coordinator can provide valuable assistance.

Have the class survey places in the school and community where vending machines exist.

- o What type of vending machines are used?
- o What food products are available and what is their cost?
- o What types of people use the machines?
- o Do the machines provide nutritious foods where they would otherwise not be available?
- o Do the foods easily available contribute nothing more than calories?
- o How does the cost of each machine item compare with the cost of identical ones from the supermarket.

Give the class several different hypothetical sums of money on which to plan a day's food for themselves. the sums of money should range from liberal to very limited.

- o Compare different students' solutions to the problem.
- o Determine whether nutritionally adequate diets were more difficult to plan on the very limited sums of money.
- o Notice whether any particularly better choices were made when plenty of money was available.

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From this information, the class should be able to draw some tentative conclusions about possible effects of the vending machines on nutrition behavior.

Learners who have lived in a foreign country or in another part of the United States can probably think of changes in their family's food habits which have occurred as a result of moving where different foods were more readily available.

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SUB-TOPIC: Food Additives

ENABLING OBJECTIVE: *The learner is able to explain at least five functions, purposes, or uses of food additives.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Define the term food additive. o Describe the various functions of chemical food additives. o Name some common chemicals we use in our kitchens daily. o What is the difference between nutritive and nonnutritive additives? o What effect do additives have on the food supply? Paste or tape the portions of labels containing the nutrition information and ingredients of some common foods on 4" x 6" index cards. Have the learners: o Look up and define the additives present. Which ones are necessary? Which ones are worthless? Which ones are harmful? o While keeping the ingredients in mind, note the nutritional information and the USRDA's. In your opinion, is this food worth your while to eat? Analyze. o Have the class guess what foods the labels are describing.	(See page 81 of the *Teachers' Manual*.) Urban communities in the United States could not be supplied with sufficient quantities of untainted foods at the lowest possible prices without food additives. They also make foods better. For example, some prevent separation of ingredients; peanut butter, chocolate milk. Some improve the appearance of foods. Most additives deliberately placed in foods are harmless, many are natural, and many improve the nutritive value of the foods. The learners should be able to identify several of the most commonly used additives to: o improve flavor o improve color o produce a desired texture o maintain quality and increase storage life. o improve nutritive value.

Discuss the Chinese Restaurant Syndrome.

A recently discovered complex of symptoms that in some individuals produces tingling of the lips, loss of breath, fainting, chest pains. The complex resembling heart disease and due to excess monosodium glutamate (MSG) is referred to as the Chinese Restaurant Syndrome.

Have the learners plan a foods lab to compare some homemade foods with ready-made products and mixes containing additives. (Examples - cakes, doughnuts, puddings, breads)

Keep the stored food products for as long as possible. Chemical preservatives can preserve a food for an extended period of time. Cottage cheese may be used for this experiment.

- o Store part of the food products for a period of time. Compare shelf-life.
- o Compare the taste, appearance, quality of the food products during a tasting experience.

Have learners make a list of foods that contain dyes to improve their appearance.

Learners may be surprised to learn about certain foods that contain dye they had thought were natural in color. (Examples - oranges, maraschino cherries, margarine)

- o What are the dyes? Are any of them harmful? Explain.

SUB-TOPIC: Advertising

ENABLING OBJECTIVE: *The learner is able to deduce that food advertising is carefully planned and timed to effectively influence the eating behavior of specific groups of people.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have the learners record for one week the TV commercials they see for all types of foods. Develop a class summary of the commercials and discuss some of the significant implications of them, the techniques they use, etc. o Does the day and/or time of day influence what is advertised? Why? o Are the foods advertised nutritious? o How many advertisements for fruits and vegetables were observed? o What common types of persuasions are used? What are they? o What can be concluded about TV advertisements? o How many advertisements were for "junk foods and beverages"?	The class may find it effective to record the information on a chart as they gather it. Date | Day of week | Time AM/PM | TV Program | The Food | Nature of the Advertisement (See page 34 of the *Teachers' Manual*.)
Compare TV advertisement claims with the product's label. What can be concluded?	Regulations controlling labeling are different from those for advertising. Point out the agencies responsible for labeling and the media.

Have the learners critically analyze advertisements found in the media for organic foods, health foods and food supplements and laxatives. Obtain samples of some of these foods and analyze their labels, compare with similar products found in any supermarket.

Magazine and newspaper advertisements can be brought to class for class discussion and comparison with product labels.

- o What is the difference between an organic food and others that are supposedly not organic?
- o What makes a food organic?
- o What is a "natural" food?
- o What is a health food?
- o How accurate are organic and health food claims?

Have the learners examine a variety of empty cereal boxes (dried cooked, sweetened, unsweetened, ready to eat). Rank order them according to nutritional value. Rank order them according to the amount of advertising seen.

An additional activity is to record all TV ads for a whole day or specific time periods. After putting together the information from each, patterns should emerge.

- o Is there a direct or reverse correlation?
- o What is the significance of the food item and the time of advertising it?

Using the advertisements collected from the printed media as the basis for discussing the following:

Advertisements may focus on youth, sex appeal, home and comfort, adventure, nutritional health, vitality, complexion, etc.

- o How many of the advertised products have the learners eaten in the past week? Which ones are most popular?
- o Do you think the advertisements influenced you? Your parents? How persuasive are these advertisements?
- o To what underlying human motives do the advertisements appeal?
- o What approaches do you think are most effective in persuading people to buy the product? Why?

If a tape recorder is available, have the learners tape some "jingles" from food commercials.

Saturday morning is a good time for jingles directed toward children.

- o Play back the jingles in class and have the learners identify the products being advertised.

- o Do you agree that advertising has exerted considerable influence on people's eating practices? On the promotion of low-nutrition foods? Give reasons for your answers.

Although the food manufacturers have pushed highly processed low-nutrition "junk foods" on the American people, the public, through its eagerness to buy such products, has supported and encouraged the food industry.

- o To what extent do you think consumers are responsible for some of the poor quality foods we buy?

- o How do you see the role of the consumer changing the nature of the products that the food industry offers?

SUB-TOPIC: Nutritional Quackery

ENABLING OBJECTIVE: *The learner is able to identify unsound nutritional claims, products, and practices.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Have the learners read about the growth of food quackery in the United States. o How did it get started? o For what reasons does food quackery still exist? o What present social and environmental pressures could lead to future development of food quackery? o How do nutritional myths and misinformation contribute to quackery's success?	(See pages 34-35 of the *Teachers' Manual*.) Quacks are people who pretend to have medical knowledge and skill or who make false promises for their own profit. Quacks and quackery have become very sophisticated over the years.
Write a character sketch of a quack. o Have the learners depict food quacks in a series of skits.	Quacks are usually very convincing and can be very dangerous.
Have the learners look for examples of quackery in television, radio, magazine, and newspaper advertisements. o Compare the claims in the advertisements with the characteristics of a quack. o What part do emotions play in persuading one to fall prey to nutritional quackery?	See the *Teachers' Manual*, pages 34-35 for a listing of the general characteristics of quackery. The American Medical Association can provide additional information. For more general information obtain the following books: o Deutsch, Ronald, *The New Nuts Among the Berries*, Bull Publishing Company, 1974. o Schaller, Warren E. and Carroll, Charles R., *Health Quackery and the Consumer*, W.B. Saunders Co., Philadelphia, 1976 (Chapter 10). o The Editors of Consumer Reports, *The Medicine Show*, Pantheon Books, New York, 1976 (Selected chapters).

Have the learners make a list of nutrition myths on the chalkboard.

- o Identify what human need the myth is appealing to.
- o What dangers are inherent in following this myth?
- o How much of the myth is truth?
- o What makes the myth inaccurate?

(See page 36 of the *Teachers' Manual*, also Appendix B, page 110.)

Have the learners use the card catalog in the school and local libraries to prepare a list of books about food quackery.

- o Compile a bibliography using all the lists to be distributed to the class.

Include books which aid the consumer in protecting her/himself against food quackery.

Have the learners prepare a bulletin board or poster outlining the steps a consumer must take to help put quacks out of business.

Consumers need to:

- o be informed
- o ask for proof of claims and cures
- o be aware of the quack's methods and appeals
- o read labels carefully
- o place trust in trained professional people.

SUB-TOPIC: Government Regulations

ENABLING OBJECTIVE: *The learner is able to explain several governmental regulations as they pertain to the nutritional and sanitary quality of foods.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Government regulations affect the quality of foods available. Several major laws protect the consumer. Have the learners research selected laws. o Determine the motivation for the law's enactment. o What provisions does the law make? o How effective is the law in protecting the consumer?	It might be helpful to list the major laws that protect the consumer. Some of these are listed below: 1784 - first general food law - Massachusetts 1824 - Flour Inspection Act - Alexandria, VA 1850 - Pure Food and Drink Law - California 1891 - 1895 - Several animal inspection acts passed 1897 - The Tea Importation Act 1906 - Pure Food and Drug Act - Meat Inspection Act 1913 - Gould Amendment to Pure Food and Drug Act 1916 - Grain Standards Act 1923 - Filled Milk Act 1927 - Import Milk Act 1930 - McNary-Mapes Amendment to Pure Food and Drug Act 1938 - Federal Food, Drug and Cosmetic Act Amendment 1939 - Federal Food Standards Act 1946 - Agricultural Marketing Act 1956 - Fish and Wildlife Act - Nonfat Dry Milk Act 1957 - The Poultry Products Inspection Act 1960 - Color Additive Amendment 1967 - Wholesome Meat Inspection Act 1973 - Delaney Clause

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The enrichment of white bread and flour is mandatory in most states. Have the learners study the labels of grain products (grits, spaghetti, macaroni, rice, bread)

- o Which products are enriched?
- o What is enrichment?
- o What is the purpose of enrichment?
- o How does enrichment affect the nutritional quality of a product?
- o Should all flour and grain products be enriched? Explain.

Enrichment laws were based on the belief that almost everybody ate a significant amount of bread each day.

(See page 77 of the *Teachers' Manual*.)

Have the learners describe fortification.

- o What is fortification?
- o How does fortification differ from enrichment?
- o How is a food chosen as a vehicle for fortification?
- o What are some fortified foods?
- o How has the idea of fortification been exploited by the food industry?

Standards have been established for minimum and maximum limits for nutrients to be added.

(See page 77 of the *Teachers' Manual*.)

Have the learners plan and conduct a survey involving fortified and enriched foods.

- o Compare the cost between similar products that are and are not enriched or fortified.
- o Determine whether families understand the value of enrichment and fortification.
- o Determine whether families choose enriched and fortified products.

Enrichment and fortification have proven their value in improving the nutritional health of people.

Have the learners collect labels from ready-to-eat breakfast cereals.

- o Compare the cereals for iron and vitamin B content.
- o Should there be a regulation which more closely restricts the limits of fortification of breakfast cereals. Why or why not?
- o What words do advertisers use to imply that cereals are very nutritious.

Some producers take advantage of the "halo effect" of these processes to advertise their products. Fortification and enrichment of products are relatively inexpensive procedures, but can be an effective advertising approach.

Have the learners trace the history of the Food and Drug Administration.

- o Under what circumstances was this agency established?
- o What are the duties and responsibilities of this organization?
- o Describe the Federal Food, Drug, and Cosmetic Act.
- o What is the GRAS list?

A significant beginning date is the passage of the Pure Food and Drug Act of 1938. Information may be found in an encyclopedia.

In 1958, the Food Additive Amendment was added to the Food, Drug, and Cosmetic Act.

- o What did the amendment say?
- o How did this amendment change the burden of proof for safety?
- o Describe the Delaney Clause.

See earlier discussion of food additives under this topic.

(See page 81 of the *Teachers' Manual*.)

Have the learners choose a food additive that has been removed from the market by Federal regulations or is under question. (Examples: DES, cyclamates, Red dye No. 2, nitrites)

- o Research the history of the additive.
- o Report to the class.

A wall chart of food additives is available from the Center for Science in the Public Interest, 1755 S Street, N.W., Washington, D.C. 20009.

Also, contact the Regional Nutritionist of the N.Y.S. Department of Health. (See page 108 of the *Teachers' Manual*.)

Have the learners prepare for a debate of the risks and benefits involved in using food additives.

To prepare for debate obtain a catalogue of FDA publications for consumers. Several brochures are available on food additive topics. Write to: U.S. Department of Health, Education, and Welfare, Public Health Service, Food and Drug Administration, Office of Public Affairs, 5600 Fishers Lane, Rockville, Maryland 20857.

Invite a sanitarian from your city or county health department to speak to the class about the regulations which govern the cleanliness of public eating places, and the health practices of food handlers.

- o What procedures of inspection are used?
- o What types of food contaminants are there?
- o How are proprietors dealt with for improving conditions?

Ask the sanitarian to bring samples of report forms and completed reports to show class, if possible.

Have the learners choose some aspect of food-borne illnesses and prepare a poster for classroom display.

- o In what ways does food become contaminated?
- o Under what conditions do food poisoning organisms grow best?
- o Differentiate between food-borne,micro-organism-caused infections and intoxication.
- o Describe food poisoning caused by staphylococus,salmonella, and botulinum.
- o Name some food poisons of natural origin.
- o Explain the "tolerance principle" in relation to regulating pesticide residues on food.
- o What diseases can be spread by contaminated food, water, milk, and utensils.

Many people suffer from food poisoning each year without realizing it. Look for recent statistics. Your local Department of Health can help.

SUB-TOPIC: Political Influences

ENABLING OBJECTIVE: *The learner is able to conclude that political factors have had and will continue to have a great impact on the nutritional health of people.*

LEARNER ACTIVITIES	TEACHER INFORMATION
Arrange a regularly scheduled current events reading activity. Gather information and discuss the effect of a current political conflict on the nutritional health of the people involved.	Encourage learners to bring in reputable newspapers and magazines. Arrange a storage area in the classroom. See page 77 of the *Teachers' Manual* for a discussion of government regulations.
Invite several community people to tell class about their personal experiences during World War II. o What attempts did the government make to ensure nutritional adequacy in the face of possible shortages? o How did food rationing work? o What were victory gardens?	Try to include people of various income levels. Discuss also some present trends as a result of continuing rising food prices.
Discuss the current interest in the United States Congress in hunger and malnutrition among poor people in the U.S. o How has the Federal government attempted to increase the awareness of all Americans of the health and nutritional problems of poor Americans? o In what ways can the government assist people who are malnourished?	Malnourishment refers to undernourishment and overnourishment. See pages 82 to 92 of the *Teachers' Manual*.)

Have learners identify a number of Federal food assistance programs. From the list choose a program to investigate.

- o What are the objectives and goals of each program?
- o Who is eligible for the program?
- o How are the services obtained?
- o How effective are the programs?
- o Encourage students to interview someone actively involved in a program.

Have learners determine what the local situation is with regard to fluoridation of water.

- o If your community's water supply is fluoridated, determine what events lead to the decision to add fluoride to the water and how recently the practice was begun.
- o If your community's water supply is not fluoridated, find out the history of the issue and determine where it has been a recent political issue.
- o Analyze the arguments for and against fluoridation.
- o Do the arguments against have a tinge of the food faddist?

The Food and Nutrition Service was established in 1969 to administer Federal food programs.

Your local dental society could be a fine resource on the fluoridation issue in your community.

Discuss: In the U.S. we are rather inconsistent in our methods for adding nutrients to foods, even when their addition has been proven beneficial. Most states make enrichment of bread mandatory. Salt is sold both iodized and plain, and the consumer must choose what to buy. When it comes to fluoride in water, it is usually voted upon by a community.

- o Should legal mandate or consumer choice be the basis for such decisions?
- o Which method do you think is best? Why?
- o Do you think snack foods should be fortified to supply vitamins, minerals, and proteins in relationship to calories? Why or why not?

For review, compare the terms:

- o restoration
- o enrichment
- o fortification
- o nutrification